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### Exports of Iranian natural gas to regional and international markets a study of political, legal and economic barriers

Hassanzadeh, Elham

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# Exports of Iranian Natural Gas to Regional and International Markets

Elham Hassanzadeh

2013

University of Dundee

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# **Exports of Iranian Natural Gas to Regional and International Markets: a Study of Political, Legal and Economic Barriers**

**Elham Hassanzadeh**

Submitted in Partial Fulfilment of the Requirements  
for the Award of the Degree of Doctor of Philosophy  
in Graduate School of Natural Resources Law, Policy  
and Management, Centre for Energy, Petroleum and  
Mineral Law and Policy (CEPMLP)

**University of Dundee**

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**Declaration****BY THE CANDIDATE:**

I, ELHAM HASSANZADEH, do hereby declare that I am the author of this thesis; that unless otherwise stated, all references cited have been consulted by me; that the work of which the thesis is a record has been done by me and that it has not been previously accepted for a higher degree.

Signed:

.....

**Elham Hassanzadeh**

**BY THE SUPERVISORS:**

It is hereby declared that the work presented in this Thesis is the work of the candidate ELHAM HASSANZADEH, and that in carrying out this work, the conditions of the relevant Ordinance and Regulations have been fulfilled.

Signed:

.....

**Prof. Peter D. Cameron**

.....

**Prof. Jonathan P. Stern**

## List of Abbreviations

### UNITS

bcm	billion cubic meter
bcm/yr	billion cubic meter per year
km	kilo meter
IRR	Iranian rial
mcm	thousand cubic meter
mcm/yr	thousand cubic meter per year
mmcm	million cubic meter
MMBtu	Million British thermal unit
Mt	Million tonne
kWh	Kilowatt hour
tcm	trillion cubic meter
US\$	United States dollar

### OTHERS

AIPC	Anglo-Iranian Petroleum Company
APOC	Anglo-Persian Oil Company
ASCM	Agreement on Subsidies and Countervailing Measures
BIT	Bilateral Investment Treaty
BG	British Gas
BOO	Build- Own- Operate
BOT	Build-Operate-Transfer
BP	British Petroleum
CBI	Central Bank of Iran
CEPMLP	Centre for Energy, Petroleum and Mineral Law and Policy
CIF	Cost, Insurance and Freight
CIS	Commonwealth of Independent States
CISADA	Comprehensive Iran Sanctions Accountability and Divestment Act

CNOOC	China National Offshore Oil Corporation
CNPC	China National Petroleum Corporation
CPC	Crescent Petroleum Company
CSIS	Center for Strategic and International Studies
DSC	Development Service Contract
EDSC	Exploration and Development Service Contract
EER	Energy Environment Review
EIA	Energy Information Administration
EOR	Enhanced Oil Recovery
ESC	Exploration Service Contract
EU	European Union
FIPPA	Foreign Investment Promotion and Protection Act
FOB	Free On Board
FTZ	Free Trade Zone
GDP	Gross Domestic Production
GSI	Global Subsidies Initiative
IAEA	International Atomic Energy Agency
ICOFC	Iranian Central Oil Fields Company
ICSID	International Centre for the Settlement of Investment Disputes
IEA	International Energy Agency
IEEPA	International Emergency Economic Powers Act
IEG	Independent Evaluation Group
IISD	International Institute for Sustainable Development
ILG	Iran LNG Ltd
ILSA	Iran-Libya Sanction Act
IMF	International Monetary Fund
IOC	International Oil Company
IOOC	Iranian Offshore Oil Company

IP	Intellectual Property
IPI	Iran-Pakistan-India
ISA	Iran Sanction Act
JCC	Japan Crude Cocktail
JMC	Joint Management Committee
HDPE	High Density Polyethylene
LAPFI	Law for the Attraction and Protection of Foreign Investment
LIBOR	London Interbank Offered Rate
LICA	Law on International Commercial Arbitration
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
LRAIC	Long-Run Average Incremental Cost
LTEOSA	Long-Term Export Oil Sales Agreement
MDP	Master Development Plan
MEES	Middle East Economic Survey
MENA	Middle East and North Africa
MoU	Memorandum of Understanding
Mtoe	Million tonne of oil equivalent
NIGC	National Iranian Gas Company
NIGEC	National Iranian Gas Export Company
NIOC	National Iranian Oil Company
NIORDC	National Iranian Oil Refining and Distribution Company
NIPC	National Iranian Petrochemical Company
NISOC	National Iranian South Oil Company
LNG	Liquefied Natural Gas
OECD	Organisation for Economic Co-operation and Development
OFAC	Office of Foreign Assets Control
OIES	Oxford Institute for Energy Studies

OIETAI	Organisation for Investment and Economic and Technical Assistance in Iran
OPEC	Organisation of Petroleum Exporting Countries
POGC	Pars Oil and Gas Company
PSA	Production Sharing Agreement
R/P	Reserves-to-Production
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TAP	Trans Adriatic Pipeline
TPES	Total Primary Energy Supply
UAE	United Arab Emirates
UN	United Nations
UNCITRAL	United Nations Commission on International Trade Law
UNSC	United Nations Security Council
UNCTAD	United Nations Conference on Trade and Development
US	United States
WEO	World Energy Outlook
WTO	World Trade Organisation

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Finally and most importantly, I owe not only this dissertation, but all my achievements in my life to my Father without whose endless love and moral and financial support, none of my dreams could have come true.

## **Abstract**

This thesis critically examines exports of Iranian natural gas to regional and international markets. Owning the world's 2<sup>nd</sup> largest proven natural gas reserves, Iran can potentially be considered a major gas exporter. Yet, stringent international sanctions, coupled with domestic politicisation of the industry and lack of an 'attractive' investment framework, have made Iran unable to capitalise its huge natural gas potential both in domestic and international markets. In this research, a multidisciplinary approach is adopted to examine the main challenges hampering Iran's ability to become a major gas exporter. These challenges range from political and legal to economic and fiscal.

In this thesis, the extent to which the Iranian gas industry is affected by progressive international sanctions, particularly as a result of U.S. pressures, is considered extensively. It appears that U.S. and international sanctions have had detrimental impact on the development of the Iranian petroleum industry through limiting Iran's access to financial institutions and technologies. In addition, in Iran the constant policy struggle between the need for foreign investment and technology in the petroleum sector on one hand, and the sentiment towards foreign exploitation on the other, is analysed in terms of impact of political challenges in the development of Iran's natural gas industry. The legal and fiscal terms of buyback contracts as the only available contractual framework for development of the upstream petroleum sector is also reviewed as a part of the evaluation of the 'attractiveness' of Iran's investment framework. This research offers second thoughts on the over-estimated role of law in development of natural resources and illuminates the importance of other factors, including policy making and governance institutions, in attracting foreign investors and the development of the petroleum sector.

In the discussion about the development of Iran's natural gas industry, subsidies are also identified as economic challenges, deterring foreign investors, causing wasteful consumption and creating an inflated domestic market. Two years into the subsidies

reform in Iran, the plan has fallen short of achieving its objectives, including controlling domestic energy consumption and freeing up capital to be re-invested in the petroleum industry, mainly as a result of deteriorating economic conditions and Government mismanagement.

The issue of supplying gas to domestic or export markets in the light of the country's current limited production capacity has turned into a major political debate between the Parliament and the Government resulting in failure to fully meet its supply commitments to either market. Inability to produce adequate volumes of gas and its 'ambitious' gas expansion policies both in domestic and international markets, has forced the country to import gas from Turkmenistan. The unexpected title of 'a net gas importer' for a country with the 2<sup>nd</sup> largest gas reserves in the world, has raised many questions over the country's ability to substantially contribute to the growing global gas market. In this thesis, attempts are also made to highlight the social and economic benefits of allocating gas to domestic and export markets. However, conducting a solid economic analysis is not possible, as first of all, such an analysis is beyond the scope of this thesis, and secondly the required data and statistical material is not available or accessible.

This research suggests that given the country's huge domestic market, industrialisation targets, young population and the necessity for job creation, as well as country's dependence on gas re-injection into oilfields to maintain the oil production, Iran may not want to be "the next Qatar" in terms of exports. Available data suggest that gas export is not the most beneficial economic outcome for Iranian gas; and for all of the foregoing reasons, and even if sanctions are removed, it would take Iran 15-20 years to develop such a major export capability. This thesis offers recommendations to policy makers to conduct comprehensive economic analyses over costs and benefits of allocating gas to domestic and export markets, while giving due consideration to the pressing issue of 'welfare maximisation' and distributional impact of consuming gas domestically.



## **Part One- General Background to the Research**

## **1. Chapter 1: Introduction**

### **Introduction and Background**

During the last few decades, global economic growth and increasing concerns about local, regional and global environmental problems have encouraged the consumption of natural gas as the cleanest fossil fuel on an unprecedented scale. Abundant natural gas reserves worldwide, availability of required technologies and extensive infrastructures to explore, exploit, and transfer natural gas to the end users have illuminated new horizons for further development and consumption of natural gas.

Uneven distribution of natural gas resources throughout the world and declining production capacity of major consuming regions, such as Europe, have highlighted the significance of natural gas export across borders. In addition, growing concerns over the issue of climate change and the requirement for consumption of cleaner fuels, and equally important the issue of energy security, have forced policy makers to look for additional gas resources in order to diversify supplies.

Iran as a major natural gas owner, whose reserves are ranked as the 2<sup>nd</sup> largest in the world, is potentially in a unique position to fulfil growing demands in regional and international gas markets. Massive proven reserves, geographical proximity and ease of access to the regional markets as well as low costs of development and developed infrastructure equip Iran with required conditions to become a major supplier of gas to global markets.

But, in reality, the country has exhibited a completely different picture. The prolonged exposure to various challenges, ranging from legal and political to economic and fiscal have posed serious hurdles to the development of the country's natural gas resources. Iran's political stand-off against the international community over its nuclear activities has entailed imposition of progressive economic sanctions on the country which have directly affected the development of its petroleum

resources. In addition to international sanctions, domestic political and economic challenges and Government's unstable natural gas policies have placed additional constraints on the development of the sector.

Iran's petroleum industry has been significantly affected by important historical events, including the D'Arcy Concession Agreement of 1901, the Nationalisation Movement in 1951 as well as the 1954 Consortium. The victory of the Islamic Revolution changed the Iranian oil and gas industry in many aspects, as it caused annulment of all previous rules and regulations and gas export contracts. Followed by the Iran-Iraq war, the situation further exacerbated leaving the country with heavy damages to the petroleum industry. Starting from the mid 1990s, the systematic U.S sanctions targeting the Iranian petroleum sector combined with all of those historical events had a permanent impact upon Government's politicised behaviour in the petroleum sector.

Although Iran's policies in the development of its petroleum sector may be puzzling in relation to the unrestrained nature of global commerce, they cannot be dismissed out of hand as arbitrary, due to the economic and historical background preceding their rise. Without studying the historical reasons for Iran's current policies in the petroleum sector, it is impossible to fully understand the current difficulties faced in the course of gas transactions or predict the future trend in its development.

This research, therefore, aims to provide an empirical rather than a theoretical analysis of Iran's position in the global gas market in the light of political, legal and economic challenges to the development of its natural gas industry.

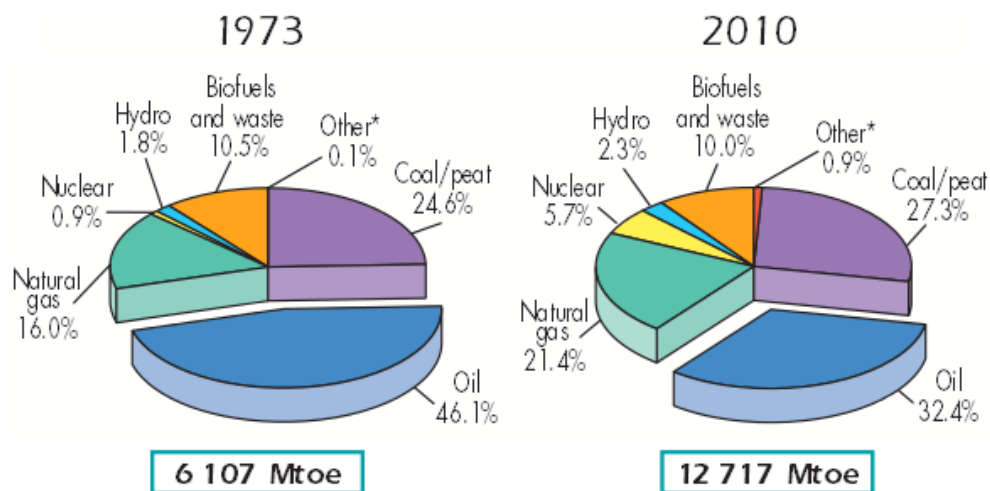
### **1.1. Importance and Objectives of the Study**

The study of Iran's gas exports has direct implications for supply to both domestic and international markets. Specifically, it derives its significance from the growing trend of natural gas consumption worldwide, concerns over energy security and the

import diversification, and last but not least the important role Iran can play as a potential major gas supplier.

Natural gas is an increasingly important fuel in meeting the world's energy needs. Growth in demand for gas has far surpassed that for the other fossil fuels due to its more favorable environmental attributes, flexibility as a fuel, affordability and ample resources available. According to the International Energy Agency (IEA), in 2010 natural gas constituted more than one fifth of the world energy consumption (Figure 1.1).<sup>1</sup> The share of natural gas in the global energy mix increased from 16% in 1973 to 21.4% in 2010 and is projected to further increase to 23% in 2035 (Figure 1.2).<sup>2</sup>

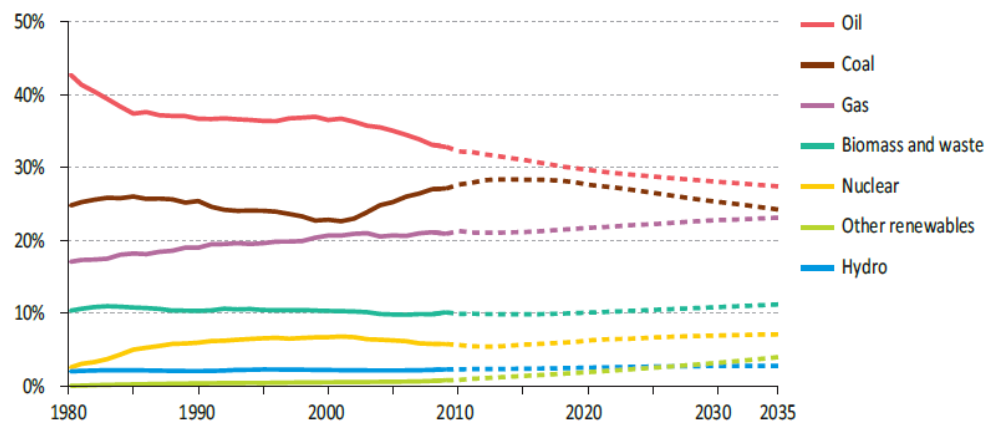
**Figure 1.1- World Total Primary Energy Supply from 1973 to 2010 by Fuel (Mtoe)**



Source: IEA (2011)

<sup>1</sup>"Key World Energy Statistics." International Energy Agency, 2012

<sup>2</sup>"World Energy Outlook." International Energy Agency, 2011

**Figure 1.2- Shares of Energy Sources in World Primary Energy Demand**

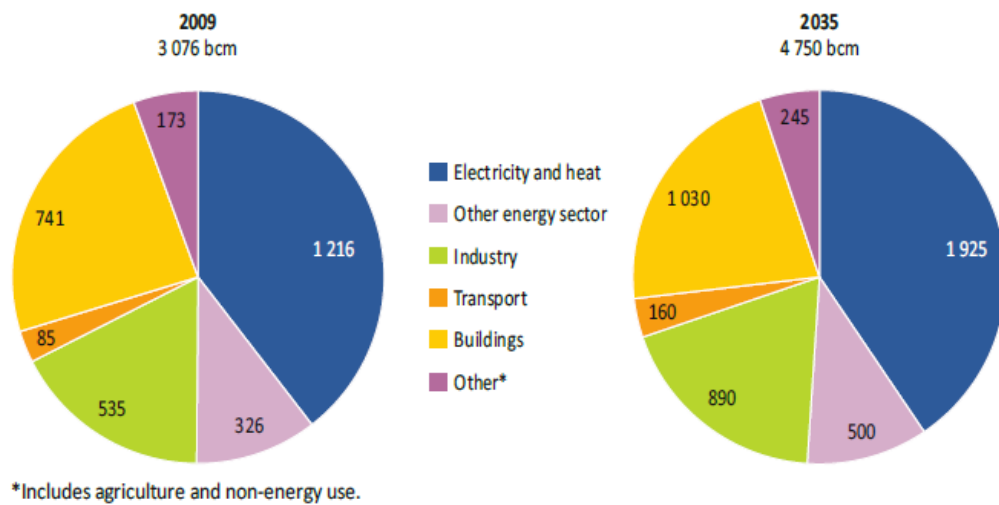
**Source: IEA (2011)**

The growth in natural gas consumption can mainly be attributed to population growth, increasing economic development, industrialisation as well as its role in diversifying away from oil and improving environmental standards, particularly air quality. It is used across all stationary sectors: industrial, power generation, in addition to household and commercial sector. The largest share of global gas demand comes from the power sector, where gas consumption for electricity generation is projected to increase to more than 1.9 tcm by 2035, at an annual rate of 1.8 percent (Figure 1.3).<sup>3</sup> The next largest consumption of gas is in buildings, primarily for space and water heating. According to the IEA, in industry, global consumption of gas is set to grow faster than in any other end-users sector, where gas is used mainly for production of steam for mechanical energy and supplying heat to produce materials and commodities. Gas use in industry is also projected to grow from 535 bcm in 2009 to 890 bcm in 2035, with petrochemicals, iron and steel, and non-metallic minerals sub-sectors such as cement, taking the largest shares.<sup>4</sup>

<sup>3</sup> "World Energy Outlook." International Energy Agency, 2011

<sup>4</sup> *ibid*

**Figure 1.3- Primary Natural Gas Demand by Sector, 2009 and 2035**



**Source: IEA (2011)**

Although resources of natural gas are finite and it is a non-renewable source of energy, global resources are plentiful.<sup>5</sup> Natural gas reserves are continuously increasing as new exploration and extraction techniques allow for wider and deeper drilling. The Development of unconventional gas (shale gas, tight gas, and coal-bed methane) through utilising modern techniques of horizontal drilling and hydraulic fracturing has unlocked a major new class of gas reserves which are set to play a central role in meeting rising natural gas demand. According to the IEA, unconventional gas accounts for close to half of the increase in global gas production between 2011 and 2035, its share of production rising from 16% to about 26%.<sup>6</sup> Nevertheless, the prospects for unconventional gas production worldwide remain uncertain, mainly due to public concerns about the environmental and social impacts, an adverse fiscal and regulatory framework, limited access and proximity to pipelines and markets and shortages of expertise, technology and water.<sup>7</sup>

<sup>5</sup> The remaining conventional resources of natural gas by the end of 2011 totalled more than 400 tcm globally, equal to about 120 years of production at current rates. Adding unconventional recoverable resources (which are of similar size) extends this figure to nearly 250 years. "World Energy Outlook." International Energy Agency, 2011

<sup>6</sup> "World Energy Outlook." International Energy Agency, 2012

<sup>7</sup> *ibid*

The growing importance of natural gas as a major source of energy is also shown by the investment devoted to the natural gas industry worldwide. According to the IEA, projected trends in gas demand and supply call for total cumulative investment of around US\$9.5 trillion in supply infrastructure in the period between 2011 and 2035. Over the projected period, US\$5 trillion is estimated to be the gross upstream investment requirement for conventional gas production capacity.<sup>8</sup> Despite market uncertainties created as a result of changes in pricing mechanism in Europe and the shale gas development in the U.S., increasing demand in the recent years have led to new expansion and exploration projects. According to the IEA, international trade in natural gas is set to continue to expand through 2035 where inter-regional gas trade increases by nearly 80% between 2010 and 2035, from 675 bcm to nearly 1,200 bcm.<sup>9</sup> The largest share of inter-regional gas trade is carried by pipeline, with 58% of the total in 2011. Pipeline trade is set to further expand as new inter-regional pipeline projects are put into operation, including lines from Russia to China and Europe, and from the Caspian to Europe and India. According to the IEA, in 2035, pipeline trade still represents about half of global inter-regional gas trade. It has also projected that a larger share of the growth in inter-regional gas trade over the coming decades is set to be taken by LNG. Global LNG trade has been growing rapidly in recent years, with a wave of capacity additions led by Qatar, which has the largest LNG export capacity in the world. There are at present a dozen LNG liquefaction projects under construction- seven of them in Australia- with a combined capacity of 108 bcm per year; when all of them are completed, probably by 2018, they boost global LNG export capacity to around 480 bcm per year.<sup>10</sup>

As projected by the World Energy Outlook (WEO) 2012, global gas demand is set to increase from 3.3 tcm in 2010 to 5.0 tcm in 2035, an increase of 50 percent.<sup>11</sup>

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<sup>8</sup> "World Energy Outlook." International Energy Agency, 2012

<sup>9</sup> *ibid*

<sup>10</sup> *ibid*

<sup>11</sup> *ibid*

Developing Asian countries are the main drivers of this growth, followed by the Middle East. In non-OECD countries, the supportive Government policies particularly in China and India are targeting an increasing role for natural gas. The Middle East region is predicted to have an incremental output of 550 bcm by 2035, about 60 percent of which is projected to be consumed locally, mainly in power stations.<sup>12</sup> The growing trend of consumption in the region is essentially fuelled by rapid economic and population growth, and due to continuing urbanisation and industrialisation.<sup>13</sup>

Natural gas consumption in OECD countries, with the exception of the U.S., is expected to slowly recover after the economic recession of 2009. In Europe, gas demand is projected to return to the level of 2010, i.e. 569 bcm, only towards the end of the current decade.<sup>14</sup> In most European countries, decline in the gas production and the need for gas import through either pipeline or LNG is a problematic issue. In gas importing countries, energy security and 'geopolitical rivalries', instability in exporting countries, as well as fears of a scramble for supplies and exporting nation's fundamental need for energy to power their own economic growth, have encouraged debates on how to manage dependence on imported natural gas.<sup>15</sup> The Russia-Ukraine gas disputes in 2006 and 2009 and the resulting gas cut-offs, was a turning point in EU energy policy. The crisis not only seriously damaged the Russia's reputation as a supplier to Europe and Ukraine's reputation as a transit country, but also intensified European consumers' efforts to diversify away from Russian gas. Although there are disagreements among commentators about the reasons behind the occurrence of the incident, and whether the Russian government uses energy as an economic and political 'weapon against European countries', the Russian gas cut-offs highlighted the significant level of European dependence on the Russian gas and taught an

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<sup>12</sup> *ibid*

<sup>13</sup> Fattouh, B, and Stern, J., "Introduction" In *Natural Gas Markets in the Middle East and North Africa*, edited by Bassam Fattouh and Jonathan Stern: Oxford University Press, 2011

<sup>14</sup> "World Energy Outlook." International Energy Agency, 2012

<sup>15</sup> Yergin, D. "Ensuring Energy Security." *Foreign Policy* 85(2), 2006, p. 71



important security lesson to Europe: *“It is not wise for any country or region to become overly dependent on a single supplier or a single supply route.”*<sup>16</sup>

Iran, having geographical proximity to energy markets of the West and the East, and owning some of the world largest gas resources, can be considered a potential major supplier of regional and international gas markets (see Chapter 2). The country, holding approximate proven reserves of 33.1 tcm, is the 2<sup>nd</sup> largest gas owner in the world, after Russia and is followed by Qatar.<sup>17</sup> Only a single major gas field, known as the South Pars field,<sup>18</sup> is estimated to contain nearly 50 tcm of gas, “accounting to over one-fifth of the world’s proven reserves.”<sup>19</sup> The country also has a remarkable gas production rate, ranked as the fourth largest gas producer in the world in 2011, producing around 152 bcm.<sup>20</sup> Domestic gas consumption has also increased remarkably during last 30 years; experiencing a 1400-percent growth, it reached 138 bcm in 2011.<sup>21</sup> Reasons such as, low prices charged nationwide due to energy subsidies (see Chapter 5), old oilfields and the requirement for re-injection of gas to enhance the rate of recovery (see Section 2.8.4), and population growth, thus increase in households and industrial consumptions, have made the country the 3<sup>rd</sup> largest gas consumer in the world after the U.S. and Russia.<sup>22</sup> The country’s growing domestic consumption exceeding production capacity forced the Iranian Government to import gas from Turkmenistan. (see Section 2.10) The unexpected title of ‘a net gas importer’ for a country like Iran with huge gas resources raises serious questions

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<sup>16</sup> Stern, J. "The Russian-Ukrainian gas crisis of January 2006." Oxford Institute for Energy Studies, January 16, 2006

<sup>17</sup> British Petroleum, ‘British Petroleum Statistical Review of World Energy’, 2012

<sup>18</sup> South Pars field, discovered in 1990 by National Iranian Oil Company (NIOC), is a natural gas condensate field located in the Persian Gulf. Gas production started from the field by commissioning phase 2 in December 2002. The field is planned to be developed in around 25 to 30 phases, each of which are allocated for various gas use (domestic consumption, export and oil fields re-injection). Pars Oil History of National Iranian Gas Company." NIGC, <http://en.nigc.ir/Site.aspx?ParTree=11131515> .

<sup>19</sup> Flower, A. "Natural Gas from the Middle East", In *Natural Gas in Asia: The Challenges of Growth in China, India, Japan, and Korea*, edited by Jonathan Stern. Oxford: Oxford University Press, 2008

<sup>20</sup> British Petroleum, ‘British Petroleum Statistical Review of World Energy’, 2012

<sup>21</sup> According to Iran’s Energy Balance, in 1980, domestic natural gas consumption was only 4.8 bcm (See Table 2.2). “Iran’s Energy Balance.” Ministry of Energy, 1967- 2009

<sup>22</sup> British Petroleum, ‘British Petroleum Statistical Review of World Energy’, 2012

about the country's ability to become a major gas exporter and the reasons behind the country's current weak position in supplying gas to both domestic and international markets.

Although Iran, measuring its current production capacity against its resource base, is "underperforming" as a gas producer, it has been rigorously pursuing gas exports to regional and international markets.<sup>23</sup> Beginning in the late 1960s, Iran first exported gas to the former Soviet Union at a peak rate of nearly 10 bcm/yr (see Section 2.2). Following the Islamic Revolution in 1979, all export projects were cancelled and replaced by domestic market expansion plans. However, in the early 2000s, Iran restarted its gas exports, mainly to Turkey, with a long history of failure to fulfil its export commitments either due to insufficient production, or disputes over the price, volume or quality of gas or sudden stoppage due to sharp increase in domestic market consumption particularly during cold winters (see Section 2.9).<sup>24</sup>

This research, therefore, intends to identify the reasons which, throughout the history and contemporary era i.e. during the period 1979-2012, prevented Iran from developing gas export projects. One of the direct benefits of this study is to enable readers to understand the future development of the Iranian gas industry, as well as its current state by accessing a single analytical study, in English, rather than the scattered, less detailed resources, available mostly in Farsi. The study will also benefit Iranian readers, by providing a comprehensive, analytical overview of the flaws within the current political, legal and fiscal frameworks and, therefore, pointing to the need for reform and revision of certain aspects of Government policy.

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<sup>23</sup> Amuzegar, J. 'Iran's Oil as a Blessing and a Curse', *Brown Journal of World Affairs* XV, no. I (2008).

<sup>24</sup> For an elaborate study on Iran-Turkey gas trade relationship, read Kinnander, E. "The Turkish-Iranian Gas Relationship: Politically Successful, Commercially Problematic." Oxford Institute for Energy Studies, 2010

## 1.2. The Conceptual Background of the Research

Iranian natural gas industry, since its inception in the late 1960s, has undergone many historical, political and economic crises which have directly affected Iranian Governments' strategies for the development of the industry. Before the Revolution, the country had planned many export projects; one successfully implemented i.e. Iran-Soviet Union gas export and the rest postponed or cancelled, mainly as a result of the Islamic Revolution. In the post-revolution era, Iran demonstrated an unfavorable legacy for its under-developed gas export projects. Its notoriously unstable gas export to Turkey, cancellation or substantial postponement of major LNG and pipeline projects and the country's difficulties in meeting the growing needs of its domestic market as well as failure to sufficiently supply gas for oilfields re-injection, are all regarded as indications that the country is struggling to keep up the pace in its gas production with that of domestic and export market growth. Hence, given the country's underperformance in development of its natural gas export capabilities in the past, one may pose the question of *will the future be different to the past?*

In Iran, despite the country's vast natural gas reserves, the domestic gas market offers great competition to exports. Both domestic and export markets are reasonably favourable for Iran's massive potential in the natural gas sector; though each entails different levels of political, economic and social benefits. The country is geographically, very well situated, facilitating ease of access to regional and international markets. It has substantial developed gas transmission infrastructure in place as well as growing population whose needs can be met through exchange revenue gained from gas exports. Iran also believes it can strengthen its geopolitical position through establishing gas exporting links with neighboring countries and international markets as a way of consolidating its bargaining power in the international arena (see Chapter 6).

Besides export markets, Iran has a growing domestic market the fulfilment of whose needs requires thorough analysis of various economic and social factors. During the last few decades, there has been a tendency to see the MENA region and south-east Asian gas exporting countries as the world's petroleum supplier, whereas today, as a result of policies of further advancement, industrialisation and population growth, the region itself is in the need of massive energy supply. In Iran, for the same reasons, some politicians have strongly opposed export projects, arguing that they undermine domestic supply and especially urgent requirement for re-injection of gas into oilfields.

Insufficient gas production resulting from inadequate capital investment and lack of modern technologies (see Section 3.4.2) in addition to an ill-oriented, subsidised domestic market (see Chapter 5) are two major problems leaving Iran in a chaotic situation in adequate supply of gas to these markets. Central to the discussion about the development of Iran's natural gas industry are international sanctions directly affecting attraction of capital investment and technologies to its energy sector (see Chapter 3). Initiated by the U.S. Government in the mid 1990s, sanctions were further intensified by the European Union (EU) and the United Nations (UN) as a result of concerns over the country's nuclear activities. In addition, decision-making process in Iran in the petroleum sector is unclear and constantly subject to changes due to the politicisation of the sector in which historical and political events play a major role (see Section 3.2.2).

In addition to political challenges, lack of investment in Iran's petroleum sector can to some extent be attributed to the absence of a transparent, investor-friendly legal and contractual framework (see Chapter 4). Its upstream development contractual framework, known as buy-back, has been subject to numerous criticisms both by the Iranian energy analysts and International Oil Companies (IOC). Since the victory of Islamic Revolution, many regulatory changes were made in the country's petroleum

industry, such as restrictions on foreign participation in development of the country's petroleum sector, which was previously included in the Constitution and the 1987 Petroleum Law. In the 1990s and after the Iran-Iraq war, urgent requirements for the sector's reconstruction called for significant changes in the country's attitude towards foreign investments (see Section 4.3.1). For the first time after the Revolution, the country's petroleum sector was opened to foreign participation through buy-back contracts while ensuring protection of foreign investors by ratification of the Foreign Investment Promotion and Protection Act (FIPPA), the Law on International Commercial Arbitration and several other related legislations (see Section 4.4). Despite all these regulatory changes, the country's investment framework is still criticised by many analysts for being "unattractive", arguing that had Iran introduced a more attractive legal and contractual framework, like those in successful gas exporting countries, such as Qatar, it would have been more successful in attraction of foreign investment and development of its petroleum resources (see Section 4.3.3). However, prior to proposing any legal changes, it is important to examine whether the notion of legal transplant from developed countries or those successful in development of their natural resources would bring about the same positive results for Iran (see Section 4.5.1). An inherent risk that this approach embraces is that "proposed legal changes derived from these grown out of local legal culture laws, although having the advantage of being tested already, may not take root when transplanted, due to influential historical, political, economic and cultural settings in which the importing state functions."<sup>25</sup>

Further to political and legal challenges, the Iranian Government has been facing major economic hurdles in development of its natural gas resources (see Chapter 5). The country's massive domestic gas consumption, substantially resulting from

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<sup>25</sup> Redgwell, C, et.al. "Energy Law in Europe: Comparison and Conclusions." In *Energy Law in Europe*, edited by Roggenkamp, Anita Ronne and Inigo del Guayo: Oxford University Press, 2001

Government subsidies, was not only a burden on the treasury but also affected the gas volumes available to other markets including exports. Low gas prices have also reduced investors' interest in the domestic gas sector and created a bias in favour of gas export projects which can be questioned by thorough and neutral analysis of economic and political benefits of allocating gas to different options (see Chapter 6). Although reaching to a concrete conclusion about the best allocation option, which most effectively fulfil the economic and social needs of the Iranian people is a difficult task due to unavailability of data and limited scope of this study, it is important to address this issue and try to shed some light on the complex debate over the subject matter.

Elimination of energy subsidies and increased natural gas prices is a policy that should, at least in theory, free up gas for export and release capital for development of gas infrastructures. The Iranian Government implemented the subsidies reform plan in 2010 with the aim to control domestic market growth, prevent wasteful consumption of energy, generate revenue for the Government to re-invest for development of energy sector and redistribute national wealth, fairly and equally (see Section 5.4). Two year into the reform, it is important to examine how successful the reform was in materialising the Government's objectives.

### **1.3. Statement of Problems and Research Questions**

Natural gas, despite being a relatively new fuel, is playing an increasingly important role in global energy balances, mainly due to its abundant resources worldwide and its environmental advantages. Iran, owning some of the largest natural gas reserves and its vicinity to major consuming regions, could play an important role in international gas trade as a key exporting country. The history of Iran's natural gas exports shows that in the 1970s the country was, politically and economically, in the right position to integrate its gas in global markets. However, following the Islamic Revolution,

fulfilment of this goal proved to be challenging as the country has faced major domestic and international political and economic difficulties.

Therefore, the central question to this research is:

**1. Will Iran become a major exporter of gas to global markets over the next 10-20 years?**

It will be then followed by the second question, which is:

**2. What are the major challenges which have prevented Iran from becoming a major gas exporter, and can they be resolved?**

The importance to focus on this particular topic is derived from two main reasons: first of all, there is a major gap in the existing literature relating to Iran's domestic gas industry, and Iran's potential role in international gas market; and secondly, for academic discussions as well as corporate strategies, it is important to better understand the barriers to development of the country's gas industry with political and commercial implications both in domestic and international level.

#### **1.4. Literature Review**

Issues related to natural gas production and export, are increasingly important for a country which is heavily reliant on these resources. In this context, an objective and comprehensive assessment of Iran's gas supply potential and barriers can provide greater certainty both for domestic and international consumers.

This study aims to approach the issue of Iran's gas export with a view of the country's historical, political, legal and economic variables influencing Iran's decision making process to monetise its natural gas resources in global markets. This is not an approach that has been taken in any detailed English-language publication or academic work on this issue. The rationale behind this approach is that it permits better understanding of future development, which is a consequence of previous matters and policies. Extensive material is available on the historical background of

the Iranian oil industry,<sup>26</sup> but in order to provide sufficient space for analytical material within this study, only those historical events that have significant political and legal aspects, common with natural gas industry, have been highlighted.

The historical gap in the coverage of the subject of Iran's natural gas industry results in uncertainty regarding many aspects of the sector's development, such as the direction in which the Iranian Government's policies are heading and whether an alternative approach may be adopted. An example of such a narrow focus can be found in the work of Ule and Brexendroff.<sup>27</sup> Despite presenting a satisfactory overview of the regulatory and contractual framework of the Iranian petroleum industry, the study nonetheless fails to provide sufficient historical context to enable an accurate assessment of the present situation and its future development.

Despite abundant oil and gas reserves with the potential to evolve as a major gas supplier, Iran's natural gas policies have been little discussed in academic literature. This can be to a large extent attributed to the lack of accurate and detailed information and data on the subject matter and also international sanction which, by aiming to exclude Iran's energy from global markets, have created a discouraging, academic atmosphere over the country's petroleum resources. Although Iran is widely seen to

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<sup>26</sup> Fakhimi, G., *30 Sal Naft Iran-Az Melli Shodan Ta Enghelabe Eslami (30 Years of Iran's Oil from Nationalisation to Revolution)*. Tehran: Mehr Andish, 2008; Ferrier, R.W. "The Anglo-Iranian Dispute: A Triangular Relationship" In *Musaddiq, Iranian Nationalism and Oil*, edited by J.A Bill and R.W Louis. London: I.B. Tauris &Co, 1988; Zoghi, I. *Masaele Siasi Eghtesadi Naft Iran (the Political and Economic Aspects of Iranian Oil)*, Tehran: Pazhang, 1381 (2001); Makki, H., *Tarikh-E Bist Saleye Iran (Iran's 20-Year History)*, Tehran: Amir Kabir, 1362; Louis, R.W., "Musaddiq and the Dilemmas of British Imperialism" In *Musaddiq, Iranian Nationalism and Oil*, edited by J.A Bill and R.W Louis. London: I.B. Tauris &Co, 1988; Long, D.E., "Oil and the Iran-Iraq War" In *The Iran-Iraq War: An Historical, Economic and Political Analysis*, edited by M.S. El Azhary: Croom Helm, 1984; Katouzian, H. *Iran in the 21st Century: Politics, Economics and Conflict*. London: Routledge, 2008; Lessani, A., *Talaye Siah Ya Balaye Siah (Black Gold or Black Disaster)*. Tehran: Amir Kabir, 1357 (1979); Ferrier, R.W. "The Anglo-Iranian Dispute: A Triangular Relationship" In *Musaddiq, Iranian Nationalism and Oil*, edited by J.A Bill and R.W Louis. London: I.B. Tauris &Co, 1988; Farmanfarmaian, K., *An Analysis of the Role of the Oil Industry in the Economy of Iran*: University of Colorado, 1955; Farmanfarmaian, K. *Nationalisation of the Anglo-Iranian Oil Company and Its Possible Effects on the Economic Development of Iran*: Stanford University; Alavi, S.A., *History of the Oil Industry in Iran*: California Institute of Asian Studies, 1978; Yergin, D. *The Prize- the Epic Quest for Oil, Money and Power*: Simon & Schuster Jan, 1991;

<sup>27</sup> Brexendroff, A, et.al., 'The Iranian Buy-Back Approach', *Oil, Gas & Energy Law Intelligence* 7, no. 1 (2009)



be in “an exceptional position to help meeting the increasing domestic and international markets”, practically almost all reviewed literature reflect a sense of hopelessness with regards to any significant development in its natural gas industry.<sup>28</sup>

Adibi and Fesharaki offer a clear and different perspective and provide extensive details about Iran’s natural gas infrastructure.<sup>29</sup> However, the study lacks historical background and, due to its limited scope, fails to present a thorough analysis of challenges to the development of Iran’s natural gas industry.

The literature on Iran’s post-revolutionary investment framework in the petroleum sector has been extensively covered in academic and journalistic works. The Iranian buy-back contracts have particularly been criticised by many scholars and industry officials on the basis that they do not serve the interests of the parties concerned.<sup>30</sup> It is widely believed that a legal and regulatory framework is a fundamental element in the stability and flexibility needed for the investment environment; and perhaps the

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<sup>28</sup> Alavi, S.A. ‘The Impact of Sanctions against I.R. Iran, Iraq and Libya with Special Focus on Iran's Oil & Gas Upstream Contracts’ *Oil, Gas & Energy Law Intelligence* 1, no. 2 (2003); Brower, D., ‘Iran: Battling Against the Odds’, *Petroleum Economist*, September (2008); Farnejad, H. ‘Strategic Approach & Legal Implications of Investment in Geopolitically Sensitive Iran’ University of Dundee, 2006; “Iran Sanctions: Impact in Furthering U.S. Objectives Is Unclear and Should Be Reviewed.” United States Government Accountability Office, December 2007; *Oil and Energy Trends*, “Iran Struggles to Expand Gas Industry.” 31, no. 8 (2006): 3-6; Fesharaki, F. “Gas Use at Issue in Iran as Oil Production Sags” *Oil & Gas Journal* (May 2006); Garver, J.W. “China's Investment in Iran Oil and Gas” Sam Nunn School of International Affairs, Georgia Institute, 2010; Ghorban, N. “Iran's Future Gas Development and Exports”, *Middle East Economic Survey* (25 February 2008); Ghorban, N. “Monetizing Iran's Gas Resources and the Debate over Gas-Export and Gas-Based Industries Options”, *Middle East Economic Survey* XLIX, no. 28 (10 July 2006);

<sup>29</sup> Adibi, S, and Fesharaki, F. “The Iranian Gas Industry” In *Natural Gas Markets in the Middle East and North Africa*, edited by Bassam Fattouh and Jonathan Stern. Oxford: Oxford University Press, 2011

<sup>30</sup> Otman, W.A. “The Iranian Petroleum Contracts: Past, Present and Future Perspectives.” *Oil, Gas & Energy Law Intelligence* 5, no. 2 (2007); Brexendroff, A., et.al., ‘The Iranian Buy-Back Approach’, *Oil, Gas & Energy Law Intelligence* 7, no. 1 (2009); Bunter, M. ‘The Iranian Buy Back Agreement’, *Oil, Gas & Energy Law Intelligence* 1, no. 2 (2003); Groenendaal, W. J. H van, and Mazraati, M. “A Critical Review of Iran's Buyback Contracts” *Energy Policy* 34, (2006): 3709-18; Hassantash, G.H. “Buy-Back Contracts and Asymmetric Information” *Oil, Gas & Energy Law Intelligence* 7, no. 1 (2009); Hassantash, G.H. “Trend of Crude Oil Prices: Buy-Back Contracts Vs. PSCs.” *Oil, Gas & Energy Law Intelligence* 7, no. 1 (2009); Me, M. “The Iranian Buyback Model and Its Efficiency in the International Petroleum Market- a Legal View.” *Oil, Gas & Energy Law Intelligence* 7, no. 1 (2009); Shiravi, A., and S.N. Ebrahimi. “Exploration and Development of Iran's Oilfields through Buyback.” *Natural Resources Forum* 30, (2006): 199-206; Shiravi, A., and S.N. Ebrahimi. “Legal and Regulatory Environment of LNG Projects in Iran.” *Journal of Energy & Natural Resources Law* 25, no. 2 (2007);

worst damage that a State can do to its prospects of investment is to cultivate an air of uncertainty. As a result, opponents of buyback contracts urge reform in the country's contractual and regulatory framework in order to promote foreign investment. Their arguments, however, lack analysis of the gradual improvements of Iranian petroleum law and policy within the context of the Iranian politics- that is the context of prohibition of foreigners from being engaged in oil and gas activities and total ban on any form of foreign investment in petroleum sector.<sup>31</sup> The Iranian Government has taken major steps in modifying its legal and contractual framework, for example through offering better terms than those traditionally contained in the NIOC's buyback contracts, including more flexibility in fiscal terms, shorter payback periods, and a slightly higher rate of return for contractors. But the major question which remains to be answered is the extent to which such changes can lead to substantial attraction of foreign investments. This question directs the current research towards the comparative law and economic development literature in which the role of legal institutions, including property rights and contracts are analysed in the economic development.<sup>32</sup> Among the reviewed literature are the works of Ulen and Cooter which have presented well-documented research on the subject matter.<sup>33</sup> In one of his

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<sup>31</sup> Fesharaki, F., and. Varzi, M. "Investment Opportunities Starting to Open up in Iran's Petroleum Sector" *Oil & Gas Journal* (2000)

<sup>32</sup> Carothers, T. *Promoting the rule of law abroad: in search of knowledge*, Carnegie Endowment for International Peace, University of Michigan, 2010; Dam, Kenneth.W. *The Law Growth Nexus: The Rule of Law and Economic Development*: Washington D.C.: Brookings Institution Press, 2006; Redgwell, C, et.al. "Energy Law in Europe: Comparison and Conclusions." In *Energy Law in Europe*, edited by Roggenkamp, Anita Ronne and Inigo del Guayo: Oxford University Press, 2001; Tamanaha, B.Z. *On the Rule of Law: History, Politics, Theory*, Cambridge University Press, 2004; Trubek, D.M, and Santos, A, *The rule of law in Development assistance: Past, present and future*, in *The New Law and Economic Development: A Critical Appraisal* 74, 2006; Watson, A. *Legal Transplants: An Approach to Comparative Law*, Virginia Legal Studies: University Press of Virginia, 1974; Cooter, R.D., 'Decentralised Law for a Complex Economy: The Structural Approach to Adjudicating the New Law Merchant', *University of Pennsylvania Law Review* 144, (1996): 1643-96; Davis, K.E. "What cant the rule of law variable tell us about rule of law reforms?." Law and Economics Research Paper, No.04-026, New York University, 2004; Davis, K.E, and Trebilcock, M.J. "The relationship between law and development: Optimists versus Skeptics." Public law and Legal Theory Research Paper Series, Working Paper 08-14, New York University, May 2008; Islam, R. "Institutional reform and the judiciary: which way forward." Policy Research Working Paper 3134. Washington: World Bank, September 2003; Kanda, H, and Milhaupt, C.J. "Re-examining legal transplants: The director's fiduciary duty in Japanese Corporate Law." *American Journal of Comparative Law* 51: 887-901

<sup>33</sup> Ulen, T.S. "The Role of Law in Economic Growth and Development." *Bonn Law & Economics*

articles, Ulen highlights the importance of governance institutions in attraction of investors, and concludes that more important than adopting a modern, investor-friendly legal framework is addressing the concerns and uncertainties related to the application of the rule of law as a result of the discretionary power of a host state and weak judicial and administrative institutions.<sup>34</sup> The late Professor Wälde also conducted many research on the role of modern legal framework in the development of international investments in hydrocarbon sector.<sup>35</sup> He argues that large investors are less reliant on effective, investor-friendly legal systems, as they “operate on the basis of their political-economic leverage than on the basis of law-and the restrictive tendencies often found in host state economic regulations.”<sup>36</sup> In this research, prior to making any recommendation for modification of the Iranian legal and fiscal framework, the role of law in the development of natural resources will be studied. It will also endeavour to identify the benchmark against which Iran’s investment regime can be examined and offer thoughts on the notion of the legal transplant for improvement of Iran’s contractual regime in the hydrocarbon sector (see Section 4.5).

In Iran, the growing domestic market demand in excess of the production capacity has caused significant challenges to adequate supply of gas to both domestic and export markets. Energy subsidies and resulting low gas prices are considered the main reason behind excessive growth in domestic market.<sup>37</sup> There is a very large literature on the topic of subsidies, their impact on global economy, and economic and political calls

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*Workshop* (April 2010); Cooter, R.D., ‘Decentralised Law for a Complex Economy: The Structural Approach to Adjudicating the New Law Merchant’, *University of Pennsylvania Law Review* 144, (1996): 1643-96

<sup>34</sup> Ulen, T.S. "The Role of Law in Economic Growth and Development." April 2010;

<sup>35</sup> Wälde, T. W. "Law, contract & reputation in international business: what world?," *CEPMLP Internal Journal*, 3.

<sup>36</sup> *ibid*

<sup>37</sup> There is no consensus on a strict definition for subsidies. The narrowest and perhaps most commonly used definition is a direct cash payment by a government to an energy producer or consumer. There are also broader definitions which attempt to accommodate other types of government interventions that affect prices or costs, either directly or indirectly. For more detail, read Chapter 5.

for their reform.<sup>38</sup> However, very few case studies of countries which have undertaken such a reform are available. In case of energy subsidies reform in Iran, aside from a descriptive report published by the International Monetary Fund (IMF),<sup>39</sup> no academic work was found to examine the economic and political impact of subsidies reform in Iran. Careful examination of the IMF report on explanation of subsidies reform planning and procedure in Iran reveals an apparent bias in the study. Whereas the Fund and Iranian Government's concerns about benefits of subsidies elimination and the effective initial planning are extensively addressed in the report, there is little mention of the plan's drawbacks and Government's failures of

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<sup>38</sup> See "Looking at energy subsidies: getting the prices right " In. (1999) *World Energy Outlook*: International Energy Agency; "Reforming energy subsidies: An explanatory of the issues and challenges in removing or modifying subsidies on energy that undermine the pursuit of sustainable development," In. (2002) edited by D. o. T. United Nations Environment Programme, Industry and Economics: International Energy Agency; "Betwixt petro-dollars and subsidies " In. (2008) *Surging energy consumption in the Middle East and North Africa States*: International Energy Agency; "Global fossil fuel subsidies and the impacts of their removal," In. (2008): Office of the chief economist International Energy Agency. "Fossil-fuel subsidies are distorting price signals," In. (2010) *World Energy Outlook*: International Energy Agency; "Joint report by IEA, OPEC, OECD and World Bank on fossil-fuel and other energy subsidies: An update of the G20 Pittsburgh and Toronto Commitments," In. (2011). "Fossil-Fuel Subsidies in APEC Economies and the Benefits of Reform," In. (2011) *An IEA background paper for the Asia-Pacific Economic cooperation*: International Energy Agency; "Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative," In. (June 2010) *Prepared for Submission to the G-20 Meeting*, edited by O. IEA, OECD, World Bank Joint Report. Toronto (Canada); Alderman, H. "Subsidies as a social safety net: Effectiveness and Challenges," In: World Bank Institute, September 2002; Alderman, H. "Subsidies as a Social Safety Net: Effectiveness and Challenges," In: World Bank Institute, September 2002; Bacon, R., & Kojima, M. "Phasing Out Subsidies-Recent Experience with Fuel in Developing Countries," In *Public Policy for Private Sector*, Washington D.C: Financial and Private Sector Development Vice President, August 2006.; Baig, T. Et.al. "Domestic Petroleum Product Prices and Subsidies: Recent Developments and Reform Strategies," In. Washington D.C.: The World Bank - Fiscal Affairs Department, March 2007. Burniaux, J.-M., & Chateau, J. "Mitigation Potential of Removing Fossil Fuel Subsidies: A General Equilibrium Assessment," In: OECD: Economics Department, 2011; Clements, B., Hugounenq, R., & Schwartz, G. "Government subsidies: Concepts, international trends and reform options," In. Washington DC: International Monetary Fund, September 1995; Coady, D. Et.al. "The Magnitude and Distribution of Fuel Subsidies: Evidence from Bolivia, Ghana, Jordan, Mali, and Sri Lanka," In. Washington D.C.: The World Bank, November 2006; Fattouh, B., & El-Katiri, L. "Energy subsidies in the Arab World," In *Arab Human Development Report*: United Nations Development Programme, 2011. Granado, J. et.al. "The Unequal Benefits of Fuel Subsidies: A Review of Evidence for Developing Countries," In *IMF Working Paper*. Washington: International Monetary Fund, 2010; Morgan, T. "Policy Design and Implementation," In *Energy Subsidies: Lessons Learned in Assessing their Impact and Designing Policy Reforms*. Geneva: United Nations Environment Programme, 2003; Victor, D. "The politics of fossil-fuel subsidies," In *Untold Billions: Fossil-fuel subsidies, their impacts and the path to reform*. Geneva: The Global Subsidies Initiative ( GSI) of International Institute for Sustainable Development (IISD), October 2009; Guillaume, D.et.al. "Iran: The Chronicles of the Subsidy Reform," In: International Monetary Fund, 2011;

<sup>39</sup> Guillaume, D, et.al. "Iran: The Chronicles of the Subsidy Reform", International Monetary Fund, 2011

implementation. Therefore, there was a pressing requirement that after two years since the start of the subsidies reform in Iran, an impartial review of the plan is provided, analysing its advantages and disadvantages and how it has affected the Iranian economy and development of its natural gas sector.

Another area in the literature on Iran's post-revolution gas exports is the notorious political debate between the Iranian politicians and decision makers over export or domestic consumption of gas.<sup>40</sup> The reviewed literature on arguments of proponents and opponents of Iran's gas export policy is rather politically-oriented and lacks economic reasoning. The only academic literature found on the subject of economic benefits of allocating Iranian gas to export or domestic markets was a doctoral thesis by Dehghani. However, this study, due to various reasons, including lack of data, does not provide exact economic returns from allocation of gas to different options. Although this thesis is not able to examine the economic benefits resulting from optimal allocation of Iranian natural gas resources, it aims to illuminate the importance of economic considerations in addition to social justifications for allocation of Iranian gas to domestic and export markets.

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<sup>40</sup> Saeedi, A.M. "Barnameh-Rizi Estrategic Baraye Modiriate Makhazene Naft Va Gaz Keshvar (Strategic Planning for Management of Country's Oil and Gas Reservoir)." *Markaz Pajooresh-haye Majlis (Majlis Research Centre)* 2002, no. 34 (2002); *Mash'al*, "Gas Export Gives Iran Stronger Position", 30 September 2007; Barkeshli, F., 'Iran's Energy Diplomacy: Challenges and Opportunities', *Middle East Economic Survey* 3, no. 6 (June 2012); Hassantash, G.H. "Saderate Gaz Iran Az Tavahom Ta Barname (Iran's Gas Export: From Illusion to Plan)." *Mosalas*, edited by Kaveh Karegar, 2006 (1385); Hosseini, M. "Gas Export: Opportunity or Threat?" *Etemad* 2006 (1385); Khandan, M. "Ezdiad Bardasht, Challensh-Ha, Forsat-Ha and Zaroorat-Ha (Recovery Rate, Challenges, Opportunities and Necessities)." *Ekteshaf va Tolid (Exploration and Production)* July 2012, no. 91 (July 2012); Khandan, M. "Shetab Dar Sarmaye Gozari Fazayande Dar Hozeye Naft Va Gas (Accelerating Investment in Oil and Gas Industry)." *ekteshaf va Tolid (Exploration and Production)* April 2011, no. 78 (April 2011); Jonoobi, P. "Lozoome Tavajoh Bishtar Be Sarmaye-Gozari Dar Bakhsh-e Gaz-e Keshvar (Requiring More Investment in the Country's Gas Sector)." National Iranian Gas Company <http://www.nigc.ir/utills/getFile.aspx?Idn=5075> 2010; Ghorban, N. "Chera LNG? (Why LNG?)" *Iran Economics* (4th December 2010); Ghorban, N. "Monetizing Iran's Gas Resources and the Debate over Gas-Export and Gas-Based Industries Options", *Middle East Economic Survey* XLIX, no. 28 (10 July 2006)

### 1.5. Research Methodology

As the quality of a study's conclusions inevitably correlates with the procedure and method used within the work, a careful analysis of these procedural factors is required in order to ensure valid conclusions.<sup>41</sup> This is particularly the case in qualitative, social research, where the intent is to create a 'decision rule', a systematic means of assessment, in order to analyse the various theories and explanation in an effort to decide which best fit the facts.<sup>42</sup>

As this study addresses various disciplines in social science, the research is complemented by a multidisciplinary approach, studying various variables which, throughout Iran's historical and contemporary era, have affected the development of natural gas industry. For this purpose, the descriptive part of the research encompasses fact-finding enquiries for various political, legal and economic matters, describing surrounding conditions during a certain historical period and contemporary era. The analytical part of the study will address the facts and theories already available to critically evaluate the influential elements in this particular research topic. The purpose is to assess the research already available and to make original empirical contributions to the study of Iranian natural gas exports.

As this research was conducted during a period of unprecedented political and economic instability as a result of intensifying international sanctions and domestic political conflict between the President and the Parliament over the country's economic reform, the author had to adopt a flexible research framework in order to accommodate any unexpected changes in the country's political and economic environment with direct impact on the natural gas industry.

With regards to the order in which the chapters in the thesis are presented, it should be highlighted that an approach consistent with the emphasis on contextual analysis

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<sup>41</sup> Dooley, D. *Social Research Methods*. USA: Prentice-Hall Inc. Englewood Cliffs, 1984

<sup>42</sup> Ibid

was used. As such, it was decided to place the section on history of the Iranian natural gas industry at the beginning of the study, in order to provide a context in which the remainder of the work, focusing on the contemporary era, can be found upon. The inclusion of an initial historical background also minimise the risk of the thesis being overly focused on the current state of the Iranian natural gas industry. The remainder of the study is structured in such a way which allows broad information related to political, legal and economic challenges to ensure that the reader is equipped with all the required facts and figures before the start of critical analysis of each of these challenges.

With reference to information sources, as one of the goals of this study was to assess controversial issues pertinent to the Iranian natural gas industry from both the foreign and domestic perspectives, and to achieve this, numerous English and Farsi sources have been reviewed. In addition to general academic literature on the issue in both languages, additional information was gathered from sources closer to the petroleum industry itself, including National Iranian Oil Company (NIOC), National Iranian Gas Company (NIGC), National Iranian Gas Export Company (NIGEC) and National Iranian Petrochemical Company (NIPC) officials and archives, the Presidency Office for Strategic Planning, Majlis Research Centre and the Institute for International Energy Studies, Tehran. Additional sources on Iran's natural gas industry, its political background and the investment regime were found in the libraries of University of Dundee, Oxford Institute for Energy Studies (OIES) and the Information Centre at the Centre for Energy, Petroleum and Mineral Law and Policy (CEPMLP). Sources used for the research on history of Iranian petroleum industry and its impact on Iran's decision making process, were collected from the Iranian National Library's archives, the Middle East Centre at the University of Oxford and the British Library. Extensive data was also collected on energy subsidies and their reform during a three-month visiting fellowship at the Global Subsidies Initiative, International Institute for

Sustainable Development in Geneva. In addition to the primary sources, secondary sources from various online journals, including Oil & Gas Journal, Middle East Economic Survey and Journal of Energy and Natural Resources Law as well as media monitoring sites and news agencies were utilised covering the recent developments.

In this thesis, in addition to written compilations, the author has also approached instrumental figures in the study of Iranian natural gas industry, including senior analyst at the Centre for Global Energy Studies in London, Dr. Manouchehr Takin, Director of International Institute for Caspian Studies (IICS), Dr. Narsi Ghorban and independent senior analyst Mehdi Varzi. These academics' comments were of extensive use in highlighting the uncertainty in the Iranian natural gas industry prevalent at the moment, but also the ongoing and potential development within the industry.

Although an extensive number of sources have been consulted from various perspective, some desirable materials could not reasonably be accessed due to practical restrictions. Among such resources were particular investment contracts, the access to which was restricted due to issues of commercial secrecy. Further unavailable sources were some of the Parliamentary reports and meeting minutes; attempts to access to these failed due to political and security reasons.

Among the problematic areas of the research were the political issues surrounding this study, which have further increased the sensitivity of the work. A large scope of the controversy surrounding the Iranian petroleum industry derives from historical precedents which, for some segments of public opinion view any arrangements other than those articulated since the Revolution as against the national interest. Historical literature was often restricted, censored or propagandised since the victory of the Islamic Revolution in 1979. Therefore, the political controversy of the topic should be considered when assessing the methodology of this issue, as the circumstances affect the material published about it, as well as the stance of Iranian politicians, media and



foreign partners. In particular, this tends to radicalise the opinion of both sides when it comes to analysing the challenges in the development of Iranian natural gas industry. Moreover, mounting domestic and international political tensions have reduced transparency of data and information on sensitive issues. Throughout the course of the research, the author encountered significant contradictions and inconsistent information on subjects, such as the subsidies reform plan in Iran, the inflation rate and the impact of international sanctions on the country's overall economy and its natural gas sector. In order to minimise the risk of presenting data which could not be independently verified, the author had to review an extensive literature in order to be able to base arguments on a wide range of materials.

## **1.6. Organisation of the Thesis**

The thesis is organized in 7 chapters which are divided into 3 parts. **Part 1** which consists of chapters 1 and 2, sets the general research background. **Chapter 1** provides the introduction to the research and defines its research problem and research questions. It also presents the justification for choosing this research problem and provides a review of the available literature, followed by a detailed account of the research methodology.

**Chapter 2** presents a historical background to the Iranian natural gas industry from the 1960s to the present. It examines Iran's natural gas export projects before and after the Revolution and elaborates on natural gas domestic market developments, including natural gas transmission and distribution, re-injection and gas import from Turkmenistan.

**Part 2** comprising chapters 3,4,5 and 6 identifies and examines the challenges affecting the development of the Iranian natural gas industry. **Chapter 3** analyses the political challenges which have slowed down the progress of gas export projects. It examines the petroleum industry's politicisation and establishes linkages between the

various historical events which have contributed to the sensitivity of the sector. U.S and international sanctions and their impact on withdrawal of foreign investors from Iran's petroleum industry also constitute a major part of this Chapter. **Chapter 4** presents a descriptive and analytical account of the Iranian petroleum contractual regime, namely buy-back contracts. The remaining part of this Chapter is devoted to the analysis of the role of law in development of natural resources. It aims to examine the extent to which changes in the Iranian contractual and legal system can affect the trend of foreign investment and consequently the development of its natural gas sector. **Chapter 5** is mainly concerned with economic issues, trying to appraise the role that the energy subsidies play in deterring foreign investors from participating in the development of the country's petroleum sector. It also provides a detailed account of subsidies reform in Iran and its implications on Iran's overall economy and its natural gas sector. **Chapter 6** highlights the prolonged political debate among Iranian politicians over allocation of natural gas resources to export or domestic markets. It addresses the issue of wealth maximization in discussions about optimal allocation of resources while giving due consideration to the important issue of equity and distribution.

**Part 3** encompasses the conclusion Chapter, namely **Chapter 7**. It draws conclusions on the study and presents future research potential.

## **2. Chapter 2: A Background to Iran's Natural Gas Industry**

### **2.1. Introduction**

The study of Iran's natural gas industry cannot be accomplished without examining the country's past and present policies over the industry's development. While in the pre-revolution era priority was given to the policy of gas export, after the Revolution a drastic policy shift from export to domestic consumption caused an 'aggressive expansion' of the domestic market, the fulfilment of whose needs placed the country amidst many challenges. Confident as a result of its mammoth natural gas reserves, the country also undertook significant gas export commitments. In the wake of the country's inability to produce adequate volumes of gas and existence of competing markets, one may pose the question of whether the country is able to meet all its gas supply commitments. To answer this question, this chapter starts by briefly reviewing Iran's natural gas history. It continues by examining the country's current gas infrastructure with an aim to identify the natural gas development policies of the post-revolution Governments.

### **2.2. The History of Iranian Natural Gas Industry**

The history of Iranian natural gas dates back to the ancient Persian era when the natural gas reserves were surprisingly found near the wreckage of ancient fire temples, such as 'Eternal Fire' near Kirkuk, also known as 'Nebuchadnezzar'.<sup>43</sup> There is also other evidence proving the consumption of natural gas in ancient Zoroastrian temples in the vicinity of Masjid Soleiman where today it is a major petroleum-rich region in Iran. The first historical evidence on actual commercial consumption of natural gas goes back to Naser-al-Din Shah Qajar dynasty when he first visited London in 1873 and spotted bulbs in the streets which were lit by gas. After returning to Iran, he ordered construction of a gas bulb factory in Tehran which started production in 1881.<sup>44</sup> Limited consumption of

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<sup>43</sup> "Recent Status of Natural Gas in Iran." In *E.C.A.F.E Natural Gas Seminar* Tehran: The United Nations and the NIOC, December 1964

<sup>44</sup> Soleimanian, R. *Takhmine Taghazaye San'ate Gaze Tabi'i Dar Iran (Estimates of Natural Gas*

natural gas continued in Iran until 1908 when, following the discovery of Iran's first oil field in Masjid Soleiman, the natural gas industry entered into a new stage which involved substantial flaring.<sup>45</sup> The gas associated with oil was flared for more than 60 years in Iran, wasting more than 130 bcm (118 Mt oil equivalent) of the country's wealth.<sup>46</sup> In 1916, Iran signed its first natural gas field development contract with a Russian individual, Mousier Mededivitch Khoshtaria, for exploration and exploitation of oil and gas resources in Gilan, Mazandaran and Estarabad for a 70-year period. The agreement, however, was never approved by the Parliament of Iran.<sup>47</sup> It was only after the 'White Revolution' of Mohammad Reza Shah Pahlavi in 1963, and his revolutionary vision for rapid economic development of the country, that utilisation of natural gas became a strategic goal to prevent resource waste and maximise economic benefits. As a result, the Shah ordered establishment of the National Iranian Gas Company (NIGC) and underlined the immense opportunities for Iran in the field of natural gas- not only because of its vast domestic consumption potentials, but also as a prospective opportunity to supply gas to the world markets. He also declared that "*the flames that are burning the nation's wealth must be extinguished at once and forever*".<sup>48</sup>

Following the Shah's new policy and the gradual development of the oil industry, consumption of gas as a fuel for electricity generation, commercial and residential units first started in the regions rich in natural gas resources, such as Masjid Soleiman, Agha Jari, Haft-Gol, and Abadan. Natural gas used as a feedstock was first consumed in Shiraz' Fertiliser Manufacturing Complex which started its operation in 1964. For this purpose, a

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*Consumption in Iran*), Azad Tehran University, 2003, p.26

<sup>45</sup> The associated gas is too dangerous to be released into the atmosphere in large volume as it contains a fairly high concentration of poisonous hydrogen sulphides and other gaseous components and can be very explosive. "Natural Gas in the OPEC Area." *OPEC 2nd E.C.A.F.E. Petroleum Symposium* edited by G Al-Ukaili. Tehran, September 1962

<sup>46</sup> Vahedi, H. "Naft Va Gaz Dar Rabate Ba Tahavolat Iran Dar 50 -70 (Oil and Gas in the Context of Iran's Development in 1970-1990).", NIGC Archives

<sup>47</sup> "Recent Status of Natural Gas in Iran." In *E.C.A.F.E Natural Gas Seminar* Tehran

<sup>48</sup> Shirazi, M. "Gas Industry in Iran." edited by NIGC. Tehran: Iranian Petroleum Institute for Public Relation Affairs 23 June 1974.

10-inch and 215 km pipeline was constructed by NIOC from Gachsaran to Shiraz.<sup>49</sup> Later, the same pipeline facilitated the supply of gas to Shiraz's Namazi Hospital where the gas was first consumed for non-industrial purposes.

Substantial development of Iranian natural gas goes back to the mid 1960s when the country initiated its Third and Fourth Economic Development Plans putting great emphasis on industrialisation and attraction of foreign investment. It was then that the country started negotiations for export of gas to the former Soviet Union. As a result, in January 1966, a Fifteen-Year Economic and Technical Co-operation Agreement was concluded in which Iran committed to export 10 bcm/yr of natural gas to the Soviet Union in return for credit finance of 260 million Soviet Roubles and the construction of various mega projects, including a steel plant, the first Trunkline pipeline (IGAT-1) and an automotive factory in Arak.<sup>50</sup> The parties agreed to review the contract in 1980 with the possibility of an extension for another 10 years. Construction of the 40 and 42-inch pipeline started immediately, and exports of Iranian gas to the Soviet Union started in 1970 after finalisation of natural gas sales and purchase agreement between the two countries. Besides export of 10 bcm of gas to the Soviet Union through IGAT-1, Iranian officials also planned to transmit and distribute 6.5 bcm of gas for domestic markets via future extensions from the same Trunkline pipeline.<sup>51</sup> Thus, IGAT-1 was considered as a mega project which was made up of various smaller projects, including (see Map.2-2):

- Construction of 100 km of natural gas network collecting gas from the Agha Jari and Maroon fields;
- 9 gas-processing facilities to improve the gas quality;

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<sup>49</sup> Soleimanian, R. *Takhmine Taghazaye San'ate Gaze Tabi'i Dar Iran (Estimates of Natural Gas Consumption in Iran)*, Azad Tehran University, 2003

<sup>50</sup> Behzad, Hamid., *Eghtesade San'ate Gaze Iran (the Economics of Iranian Gas Industry)*. University of Tehran, 1973, p.16

<sup>51</sup> Ibid , p.67

- Construction of the pipeline in two phases: 617 km and 42-inch diameter and 487 km long and 40-inch diameter (overall 1104 km) from the Bid-Boland gas processing facilities to Astara;
- 112 km and 20-inch pipeline extension to Tehran;
- 302 km and 16-inch pipeline extension to Shiraz;
- 102 km and 4, 6, 8, 12 and 16-inch pipeline extensions to Isfahan;
- Extension of a 6-inch and 71 km pipeline to Kashan;
- Extension of a 6-inch and 67 km pipeline to Qom and Sarajeh;
- Installation of 18 compressor stations between Panaveh and Astara, and;
- Construction of delivery stations and distribution networks in all above-mentioned cities.<sup>52</sup>

Natural gas export to the Soviet Union started at a marginal volume of less than 1 bcm, and reached a record of 9.4 bcm in 1977. In the gas export contract, the price of gas was set at 6 Roubles per thousand cubic meter of gas or US\$0.185 MMBtu.<sup>53</sup> Hence the Government's annual revenue from gas export was estimated at around US\$ 41 million in 1970 and an aggregate income of US\$950 million was expected during the contract's 15-year term.<sup>54</sup>

In addition to gas export to the Soviet Union, Iran initiated negotiations for export of gas to other markets, including the European market. In 1973, Iran held around 17 percent of the world's natural gas resources,<sup>55</sup> which made the country confident enough to consider expanding its presence in international gas markets. At that time, Iran's gas was mostly

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<sup>52</sup> Behzad, Hamid., *Eghtesade San'ate Gaze Iran (the Economics of Iranian Gas Industry)*. University of Tehran, 1973, p.67

<sup>53</sup> Manoochehri, N. "Tarhe Shah Looleye Gaz (Gas Trunkline Pipeline)." Tehran: Iranian National Gas Company, 1969, pp. 8-9

<sup>54</sup> *ibid*

<sup>55</sup> Vahedi, H. "Naft Va Gaz Dar Rabete Ba Tahavolat Iran Dar 50 -70 (Oil and Gas in the Context of Iran's Development in 1970-1990)"

the associated gas derived from development of the oil fields such as Maroon, Agha Jari, Koranj, Fars, Pazanan, Bibi-Hakimeh, Gachsaran and Rageh-Sefid and therefore produced along with oil. In 1973, the country signed its second gas export contract with a U.S. Company, Tenneco, for export of 5Mt of methanol and 1.6 Mt of LNG to the U.S. market based on the Gachsaran, Bibi-Hakimeh, Pazanan and Rage-Sefid fields. The discovery of non-associated gas in Shiraz in the mid 1970s encouraged further negotiations with the Soviets and Germans for exports of gas to West Germany. There were ongoing talks about export of Kangan LNG to the Japanese and U.S. markets, and therefore conclusion of the Europe gas protocol between Iran, the Soviet Union, Germany, France and Austria took many by surprise. Based on the protocol, Iran committed to export an additional volume of 15 bcm/yr of gas to the Soviet Union after construction of the 2<sup>nd</sup> export pipeline to this country and the latter committed to export the same volume to Germany.<sup>56</sup> The shares of the 15 bcm of gas were 50 percent for West Germany, 33.33 percent for France and 16.67 percent for Austria.<sup>57</sup> The duration of the contract was 20 years and gas price was fixed based on the prices of alternative fuels in West Germany's market with estimated total revenue of 20 million German Mark for Iran.<sup>58</sup> Another contract was also concluded for export of gas to Europe with a future extension pipeline to Czechoslovakia. It was anticipated that once these projects were operating, Iran would hold a leading position among natural gas exporting countries in international markets.<sup>59</sup> Iran's close economic ties with the Soviet Union gave rise to much disappointment among U.S. and British Government officials as they had serious concerns about losing their influence over Iran to the Soviet Union. There was even speculation that the explosion of the IGAT-1 pipeline in 1977 was planned by the U.S. and British intelligence services as retaliation for the growing Iran-Soviet cooperation,

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<sup>56</sup> Vahedi, H. "Naft Va Gaz Dar Rabete Ba Tahavolat Iran Dar 50 -70 (Oil and Gas in the Context of Iran's Development in 1970-1990)."

<sup>57</sup> *ibid*

<sup>58</sup> Mina, P. "Magham San'at Naft Dar Iran Dar Doran Shahanshani Pahlavi (Status of Oil Industry during Pahlavi Monarchy)." Tehran: National Iranian Oil Company, 1977

<sup>59</sup> Shirazi, M. "Gas Industry in Iran.", 1974

and the Shah's ultimatum to the western countries over review of the oil contract of the 1953 Consortium.<sup>60</sup>

In addition to export through pipelines, Iran had planned to diversify its gas export options and negotiated about the construction of LNG plants with potential customers. Iran's LNG export projects date back to the early 1970s when the country made an agreement with a consortium of Japanese, Norwegian and U.S. companies to construct, produce and export 4.8-7.2 Mt/yr of LNG from the North Pars field.<sup>61</sup> As a result, a consortium named Kangan Liquefied Natural Gas, also known as Kalingas, was established. Following the completion of exploration and exploitation, three potential export projects were defined: the first, known as MRW, was the export of LNG to the U.S market, which was cancelled in late 1970s; the second project was export of LNG to West Europe which was abandoned during the negotiation stage; the most promising project was the third, known as JKC, for export of 2.8 Mt/yr of LNG to Japan.<sup>62</sup> In the JKC project, the gas price was set at US\$0.36 MMBtu and was expected to gradually increase to US\$0.46 MMBtu by 1979.<sup>63</sup> The Kalingas project, however, was cancelled in 1979 as a result of the Islamic Revolution.

In 1980, eleven months after the Revolution, following a decision by the special commission established under the supervision of the oil minister, all oil and gas contracts were reviewed and, according to the commission's single-article mandate, petroleum contracts whose terms were considered inconsistent with the provisions of the Petroleum Act of 1950 were declared null and void.<sup>64</sup> Gas exports to the Soviet Union were also

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<sup>60</sup> According to Hoosang Vahedi, the British Lord Chalfont had even warned the British and U.S. governments over the influence of the Soviet Union on Iran which he believed could cause serious financial damage and weaken their political influence over Iran. Vahedi, H. "Naft Va Gaz Dar Rabete Ba Tahavolat Iran Dar 50 -70 (Oil and Gas in the Context of Iran's Development in 1970-1990).", p.8

<sup>61</sup> Adibi, S., *Baresi Emkan Tolid Va Saderat Lng Dar Keshvar Iran (Analysis of Production and Export of LNG in Iran)*: Azad Tehran University, 2002

<sup>62</sup> "Technical proposal for Kalingas LNG project", Kangan-Iran, vol.10, March 1978

<sup>63</sup> Adibi, S., *Baresi Emkan Tolid Va Saderat Lng Dar Keshvar Iran (Analysis of Production and Export of LNG in Iran)*, 2002

<sup>64</sup> Vahedi, H. "Naft Va Gaz Dar Rabete Ba Tahavolat Iran Dar 50 -70 (Oil and Gas in the Context of Iran's Development in 1970-1990).", p. 44



suspended after the Revolution as a result of the two countries' failure to reach to an agreement over export duration and price. More than a decade later, in 1990, export to the former Soviet Union resumed, recording an export rate of about 2.2 and 2.7 bcm of gas in 1990 and 1991, respectively.<sup>65</sup> Following the collapse of the Soviet Union and growth of the domestic market, export volume was reduced to 487mcm in 1992 and was terminated thereafter. In 1992, Tehran and Baku signed a 10-year contract for exports of 250 mcm of Iranian gas to Azerbaijan in return for import of gasoline.<sup>66</sup> Supplies were suspended in 1993 and cancelled in March 1995 due to Baku's failure to pay for the exported gas. Meanwhile, NIGC tried to utilise the pipeline for storage of gas in the north-western part of Iran, though this was never successful.<sup>67</sup>

After the Revolution, in the 1980s and early 1990s, activities relating to the export of gas continued through conducting small-scale feasibility studies for potential LNG projects. In 1987, British Gas (BG) examined the feasibility of exports of 6 Mt/yr of LNG from Iran to western European markets which was compared with the export of the same volume of gas from Nigeria, Qatar and Trinidad and Tobago.<sup>68</sup> Another study was conducted by a Japanese company in 1988 on the construction of a liquefaction plant with a capacity of 24 mcm/d of gas from the South Pars field.<sup>69</sup> The study showed that export of Iran's LNG could be economically viable if the prices were set at US\$5.3 MMBtu for CIF Japan delivery.<sup>70</sup>

In late 1990s, Iran's natural gas and its strong presence both in domestic and international gas markets became a strategic goal for the Government of the time. The production was increasing giving the country confidence over its ability to become a major domestic and

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<sup>65</sup> "Iran's Energy Balance." Ministry of Energy, 1967- 2009

<sup>66</sup> Dehghani, T., *Model Hadeaxar Sazi Manafe Eghtesadi Hasel AZakhayer Gazi Iran (a Model for Maximisation of Economic Benefits Resulting from Iran's Natural Gas Resources)*, University of Azad 1387 (2007)

<sup>67</sup> *ibid*

<sup>68</sup> Pardeli, B., *Tahlil Hazine Fayedeye Eghtesadi Asarat Tabdile Gas Tabi'i Be LNG (Cost-Benefit Analysis of Converting Gas to LNG)*, Azad Islamic University, 1387 (2008)

<sup>69</sup> *ibid*

<sup>70</sup> *ibid*

international gas supplier. The next section elaborates on developments of Iran's natural gas industry since late 1990s and highlights the country's allegedly 'ambitious' gas expansion strategy.

**Table 2-1 The Chronology of the Iranian Natural Gas Industry (1881-2012)**

<b>Year</b>	<b>Major Events</b>
<b>1881</b>	Establishment of the first gas bulb manufacturing company in Tehran
<b>1908</b>	Start of natural gas flaring era as a result of oil discovery in Masjid Soleiman
<b>1916</b>	Conclusion of 70-year exploration and exploitation contract for oil and gas resources of Giland, Mazandaran and Rostam-Abad (Gorgan) between Iran and Khoshtaria; the contract was never ratified by the Iranian Parliament
<b>1926</b>	Discovery of Pazanan gas field in the southeast of Agha-Jari
<b>1931-37</b>	Drilling of the 2 <sup>nd</sup> , 3 <sup>rd</sup> and 4 <sup>th</sup> wells of Pazanan gas field
<b>1934</b>	Natural gas field discovery in Naft-Sefid region
<b>1954</b>	Oil and gas sales and purchase agreement signed between Iran and a consortium of Seven Sisters
<b>1959</b>	Discovery of Sarajeh gas field by National Oil Export Company
<b>1961</b>	Construction of natural gas transmission pipeline from Gachsaran to Shiraz
<b>1963</b>	-The 1 <sup>st</sup> oil well in Rageh-Sefid reached a high-pressure natural gas reservoir -Establishment of Iran's National Petrochemical Company
<b>1964</b>	Consumption of natural gas as feedstock for Shiraz' Fertiliser Manufacturing Complex
<b>1965</b>	-Utilisation of natural gas as feedstock for Shahpour and Mahshahr petrochemical plants -Conclusion of the Technical and Economic Agreement with the Soviet Union which led to the construction of IGAT-1 and Iran's first gas export project -Establishment of Iran's National Gas Company (NIGC)
<b>1967</b>	-Start of IGAT-1 construction -Inauguration of Shiraz' natural gas grid
<b>1968</b>	-Conclusion of a contract with a British Company, Brefcon, for supply of machineries required for the construction of the pipeline and Bid-Boland refinery -Discovery of Sarakhs natural gas field (proven reserves of 5.5 tcm) -Oil well number 311 of Masjid Soleiman reached a natural gas reservoir -Conclusion of a contract with British Caston Portman Company for construction of Bid-Boland gas refinery and compressor stations needed for gas export to the Soviet Union
<b>1970</b>	-Natural gas sales and purchase agreement signed with the Soviet Union and start of Iran's natural gas export to the Soviet Union -Inauguration of Bid-Boland gas refinery
<b>1973</b>	Conclusion of contract between the NIGC and the U.S. Trensco Company for export of 5Mt/yr methanol and 1.6 Mt/yr of LNG to the U.S. market
<b>1973</b>	Agreement reached for export of gas through the Soviet Union to West Germany, France, Austria and Czechoslovakia
<b>1974</b>	-Conducting technical study on some of Iran's natural gas fields including Tangeh-Bijar, Qeshm and Sarakhs - Conclusion of contract with U.S., French and British companies for exploration and exploitation of oil fields which led to discovery of more gas

	reserves
<b>1975</b>	Kalingas agreement finalised for export of LNG to U.S. and Japanese markets
<b>1977</b>	Exploration, drilling and exploitation of Nar and Kangan fields by a French company which was cancelled after the Revolution
<b>1977</b>	Explosion of IGAT-1 gas export pipeline by an unknown group
<b>1978</b>	Design and planning of Shahid Hasheminejad refinery and opening of Khorasan and Mazandaran Provinces grid network supply
<b>1979</b>	Inauguration of Gourzin natural gas field in Qeshm Island
<b>1981</b>	-Start of Iran-Iraq war -Serious damage to Bid-Boland gas refineries and consequent severe gas shortages
<b>1982</b>	Inauguration of Shahid Hasheminejad (Khangiran) gas refinery
<b>1985</b>	1 <sup>st</sup> bombardment of Bid-Boland refinery by Iraqi air forces
<b>1987</b>	2 <sup>nd</sup> , 3 <sup>rd</sup> and 4 <sup>th</sup> bombardment of Bid-Boland refinery by Iraqi air forces
<b>1988</b>	Discovery of super giant gas field at South Pars
<b>1990</b>	Recommencement of gas export to the Soviet Union and Azerbaijan
<b>1997</b>	Start of gas import from Turkmenistan
<b>1998</b>	Establishment of South Pars Gas Complex Company as one of the NIGC's subsidiaries
<b>1999</b>	Construction of the IGAT-5 for transmission and re-injection of 100 mcm/d of sour gas from phases 6, 7, and 8 of South Pars to Agha Jari and Salman Oil fields
<b>2001</b>	Start of gas export to Turkey
<b>2005-7</b>	Cancellation and suspension of development contracts of South Pars Phases by the European counterparts
<b>2009</b>	Commencement of gas export to Armenia
<b>2010</b>	Inauguration of the 2 <sup>nd</sup> gas import pipeline from Turkmenistan
<b>2012</b>	E.U ban on import of Iran's gas into European markets

Source: Author's Data Collection (2012)

### 2.3. Iran's Natural Gas Policy

Since the start of the Iranian natural gas industry in 1960s, different Governments adopted various and in some cases contradictory policies with regard to natural gas industry development. In the pre-revolution era, Iran's natural gas policy was mostly based on export priorities in order to maximise the country's net income from the international sale of gas, in addition to securing direct access to international markets through direct participation in refining, marketing, distributing and sales and purchase activities in major energy consuming countries. In the 1970s, the Government also

decided to develop domestic market infrastructure in order to expand domestic consumption.

Iran's pre-revolution policy of development of gas export projects was replaced by domestically oriented development policies of the post-revolutionary regime, followed by cancellation of all export contracts and 'aggressive' expansion of domestic market transmission and distribution infrastructure.

In the years following the Iran-Iraq war, Iran's natural gas industry was affected by reconstruction problems and challenges resulting from lack of a comprehensive plan for development of the natural gas sector, in addition to the absence of any planned strategic commercial interaction between the gas producing and distributing companies.<sup>71</sup>

In the late 1990s, following to coming to power of Khatami's Government, a clear policy change was seen in the country's natural gas sector development, embedding the promotion and improvement of both domestic and export markets. According to the Third Five-Year Development Plan, natural gas export was placed second in the Government's allocation priority after fulfilling domestic market needs. In the 20-Year Economic Perspective, known as the country's key policy instrument, the economic development agenda for a 20-year period i.e. from 2000 to 2020 is articulated by the Iranian Supreme Leader. In the Perspective, natural gas is referred to as the country's "pillar of development".<sup>72</sup> As development of Iran's massive natural gas resources requires investment and technology, the Perspective characterises the natural gas industry as a strategic tool through which Iran can benefit from global facilities and sustain and stabilise its economic and political relations with the international community.<sup>73</sup> The Economic Perspective has defined Iran's overall policy in the petroleum industry as maintaining the country's position as the second largest oil producer in OPEC, improving

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<sup>71</sup> Naficy, H. "Resource Depletion, Dependence and Development- Country Commentary Iran." Chatham House, 2008; Ghorban, N. "The Need to Restructure Iran's Petroleum Industry (Revisited after Eight Years)", *Middle East Economic Survey* XXVIII, (2005): 6

<sup>72</sup> Iran's 20-Year Economic Perspective, 2006

<sup>73</sup> *ibid*

its position to the third largest gas producer in the world and aiming to achieve the position of the largest oil and gas producer in the region.<sup>74</sup>

The election of Ahmadinejad and the coming into office of an extremist Government put an end to the previous Government's long-term and strategic planning for development of the country's natural gas resources. Ahmadinejad's tough stand against the international community and the controversies over the country's nuclear programme (see Chapter 3) led to termination of almost all investment and development activities in Iran, leaving the country's already under-developed oil and gas industry remarkably weak and vulnerable.

Despite the current poor trend of investment and development in the petroleum industry, the country's Fifth Five-Year Development Plan which came into force in 2010 has articulated another 'ambitious' plan for the country's gas industry. It aims to attract US\$140 billion of investment in the oil and gas upstream sector.<sup>75</sup> Defining the country's strategic goals in supplying both domestic and international markets, the Plan has also aimed for the world's third largest gas exporter position for Iran by 2025.<sup>76</sup> To achieve this goal, the Plan has required the Government to:

- Increase natural gas production to 450 bcm/yr;
- Increase the share of natural gas in the country's energy balance (up to 70 percent, compared with its share of 60 percent in 2010) through substituting oil products with natural gas;
- Accelerate the implementation and completion of re-injection projects;
- Develop natural gas export through both pipeline and LNG;

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<sup>74</sup> *ibid*

<sup>75</sup> Khandan, M. "Ezdiad Bardasht, Challensh-Ha, Forsat-Ha and Zaroorat-Ha (Recovery Rate, Challenges, Opportunities and Necessities)." *Ektehaf va Tolid (Exploration and Production)* July 2012, no. 91 (July 2012), p.5

<sup>76</sup> "Natural gas strategic goals.", National Iranian Gas Company (NIGC) website, last updated 2012, available at [www.nigc.ir](http://www.nigc.ir)

- Develop natural gas-based industries such as petrochemical and GTL.<sup>77</sup>

Article 125 of the Fifth Development Plan requires the Government to prepare and present to the Parliament the country's 'National Bill for Energy Strategies' to govern all energy activities in the country for a 25-year period. The bill is expected to include the country's overall energy strategies, such as clarification of oil and gas production capacity, the country's energy balance, resource exploration and development and export projects. The Bill was initially planned to be prepared by the Ministry of Petroleum and ratified by the Parliament within one year from coming into force of the Fifth Development Plan (i.e. 2010), but its final ratification has been reportedly postponed by the Parliament due to growing political tensions between the Government and the Parliament.<sup>78</sup>

## **2.4. Organisation of Iran's Natural Gas Industry**

There are three major companies which control and manage Iran's gas industry: NIOC, NIGC and NIGEC (see Figure 2.1). Depending on upstream and downstream segments of the industry, one of these companies manages and controls development activities, creating an unintegrated management system in the industry. NIOC handles the gas industry's upstream activities including exploration, development and production of gas. It controls these activities through several other subsidiary companies such as National Iranian South Oil Company (NISOC), Iranian Central Oil Fields Company (ICOFC), Iranian Offshore Oil Company (IOOC) and Pars Oil and Gas Company (POGC).

The other managing company, namely NIGC, was established in 1965 and is one of four principal companies affiliated to the Ministry of Petroleum. It is responsible for downstream activities, including transmission and distribution of gas, downstream project engineering and construction, and underground storage. NIGC itself has more than 40 subsidiary companies which include:

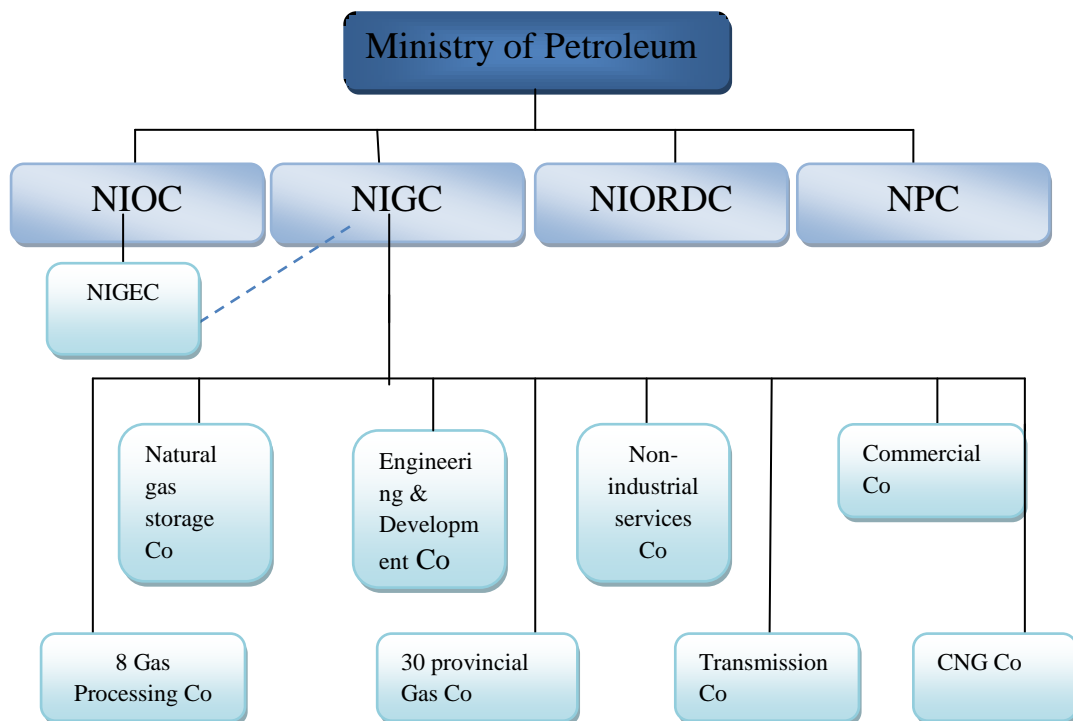
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<sup>77</sup> *ibid*

<sup>78</sup> The issue of 'politicisation' of the Iranian petroleum industry; for more detail, see Chapter 3.

- 8 gas processing companies: Ilam, Bid-Boland I, Parsian, South-Pars, Fajr, Sarkhoon & Qeshm, Shahid Hasheminejad, Bid-Boland II; and
- 30 provincial gas companies: Azarbaijan Sharghi, Azarbaijan Gharbi, Ardebil, Isfahan, Ilam, Tehran, Chahar-Mahal-va-Bakhtiari, Khorasan Shomali, Khorasan Razavi, Khorasan Jonoobi, Khoozestan, Zanjan, Semnan, Fars, Qazvin, Qom, Kordestan, Kerman, Kermanshah, Kohkilooye-va-Boyerahmad, Golestan, Gilan, Lorestan, Mazandaran, Markazi, Hamedan, Yazd, Bushehr, Hormuzgan, Sistan-va-Baloochestan.

**Figure 2.1-Iran's Natural Gas Organisation**



**Source: NIGC (2012)**

To manage natural gas marketing and sales in regional and international markets, NIGEC was established in 2003 as a subsidiary of NIOC. It manages all international related investments and projects on behalf of NIOC and its key responsibilities include:

- Marketing of Iranian natural gas and related products;
- Establishing joint-ventures with potential buyers/investors;
- Negotiating and finalising natural gas and LNG sales and purchase agreements;

- Managing and carrying out GTL projects and developing market for GTL and related gas products.

As mentioned above, the management of the Iranian petroleum industry has been scattered among various state-owned companies with overlapping responsibilities. The resulting mismanagement and lack of a long-term strategic vision for development of the industry has created institutional confusion. For example, in July 2012 and following an unprecedented decision, NIOC dissolved NIGEC and assigned its responsibilities to the international division of NIOC. A few months later and after consultation with a designated commission, the Minister of Petroleum ordered re-establishment of NIGEC and its incorporation with NIGC in an attempt to broaden the latter's responsibilities in new natural gas projects. There are still disagreements among officials over the status of NIGEC which has left its future unclear.<sup>79</sup>

## 2.5. Natural Gas Reserves and Production

As of 2011, Iran had proven natural gas reserves of around 33.1 tcm.<sup>80</sup> Holding 15.8 percent of the world's gas resources, the country stands as the world's 2<sup>nd</sup> largest gas owner after Russia.<sup>81</sup> The 10 percent increase in the country's proven gas reserves in 2011 compared with that of in the previous year can be attributed to the NIOC's new discoveries of Shoorijeh, upper and lower Mozdooran, Toosan Rood, Forooz and Sefid, Neiriz of Azadegan, and Dehrom fields which increased the country's primary in-place reserves capacity to about 1071 bcm.<sup>82</sup> In terms of production, despite the country's exposure to numerous challenges in developing its resources, including international sanctions and lack of investment capital and technology, the country has a remarkable record of natural gas production (see Figure 2.2). Producing around 151.8 bcm in 2011,

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<sup>79</sup> *Tabnak News Agency*, Abolishment of Decision over Dissolution of the NIGEC (Laghv-E Mosavabey-E Shekate Saderate Gaz)." <http://www.tabnak.ir/fa/news/270070> September 2012

<sup>80</sup> British Petroleum, 'British Petroleum Statistical Review of World Energy', 2012

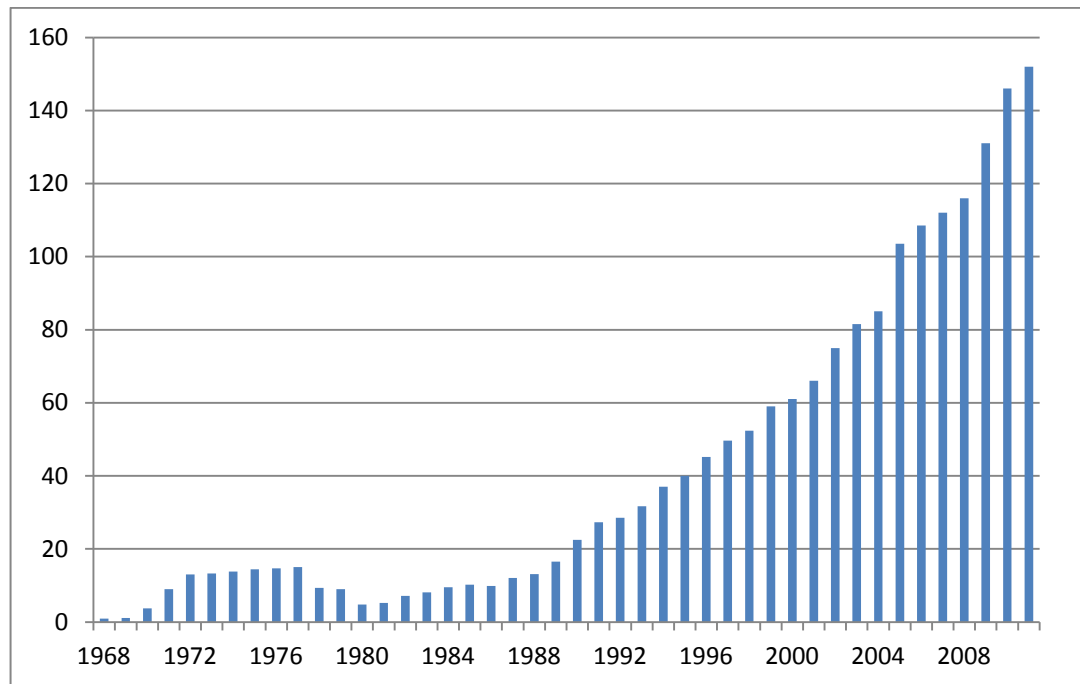
<sup>81</sup> Roughly two-third of Iranian natural gas reserves are located in non-associated field and have not been developed yet. Hence future gas resource exploration and development can add to the country's natural gas reserve; Bahreini, M., 'Analysis of Iran's Position in Natural Gas Trade', *Ekteshaf va Tolid* no. 77, March 2010, p.16

<sup>82</sup> "Iran's Energy Balance." Ministry of Energy, 2011



the country maintained its 4<sup>th</sup> position as the largest natural gas producer in the world after the U.S., Canada and Russia.<sup>83</sup> In the same year, Iran's natural gas reserves-to-production (R/P) ratio was estimated at around 100 years.<sup>84</sup>

**Figure 2.2 Iranian Natural Gas Production, 1968-2011 (bcm)**



**Source: Iran Energy Balance (1968-2000), BP Statistics (2012)**

Non-associated natural gas reserves in Iran are predominantly located offshore. Although production from associated gas fields started around half a century ago, substantial production from non-associated fields, which constitute over two-thirds of the country's reserves, dates back only to the early 2000s.

According to Iran's Energy Balance, in 2010 there were 25 major natural gas fields in Iran:

- On-shore reserves consist of 15 non-associated fields, including Khangiran, Gonbadli, Aghar, Dalan, Naar, Kangan Qeshm, Sarkhoon, Tabnak, Homa, Shanul, Varavi, Sarajeh and Tang-e Bijar, and 5 associated gas reserves of Jurassic Masjid

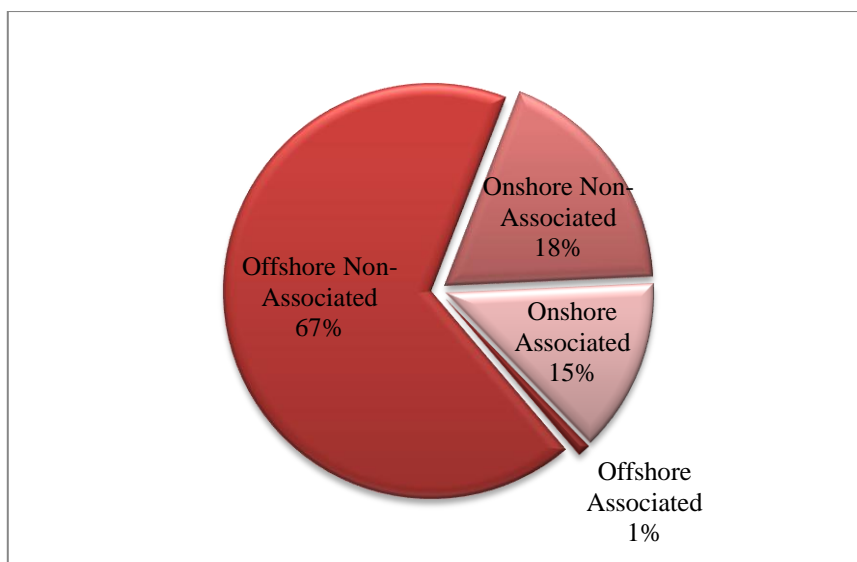
<sup>83</sup> British Petroleum, 'British Petroleum Statistical Review of World Energy', 2012

<sup>84</sup> Ibid

Soleiman, and Khami Maroon reserves, and the natural gas domes of Paazanan, Lab-Sefid and Naft-Sefid;

- 5 off-shore reserves which include the South Pars, Golshan, Ferdowsi, Kish and North Pars.

**Figure 2.3- Composition of Iranian Natural Gas Reserves**



**Source: EIA (2011)**

Among the fields, South Pars is strategically very important for the Iranian Government as the field is shared with the neighbouring country Qatar which has substantially developed its production capacity from this joint reservoir; consequently, production maximisation from the field is a priority for both countries (see Map 2.1). The giant South Pars gas field constitutes over 47 percent of the country's total gas reserves and is the location of 35 percent of Iran's total gas production. Discovered in 1988 and located 100 km offshore in the Persian Gulf, the South Pars field has a 24-phase development scheme to produce 790 mcm/d of gas.<sup>85</sup> Each phase has a combination of natural gas, condensates and/or natural gas liquids production.

<sup>85</sup> Although many studies reported different figures for the number of South Pars phases, this research follows the data presented at the official website of Pars Oil and Gas Company, the South Pars project managing company; <http://www.pogc.ir/Default.aspx?tabid=154>

**Map 2-1- Iranian Major Natural Gas Fields**



**Sources: NIOC (2009)**

According to the Pars Oil & Gas Company, the South Pars project managing company and a subsidiary of the NIOC, phases 1-10 of the field are operational and the remaining phases are either under development, or contracts for their development have been concluded (see Table 2.2).<sup>86</sup> Natural gas produced from the South Pars field is mainly allocated for domestic market and for oil field re-injection, with a few phases designated for export and GTL projects.<sup>87</sup> Since 2007, more than US\$30 billion has been invested in the development of the South Pars phases, and an estimated additional investment of US\$40 billion is required for development of the remaining phases within the next 10 years.<sup>88</sup>

<sup>86</sup> Pars Oil and Gas Company website: <http://www.pogc.ir/Default.aspx?tabid=136>

<sup>87</sup> *ibid*

<sup>88</sup> "Islamic Republic of Iran." edited by Oil & Gas Directory Middle East, 2011., p. 1075

**Table 2-2- Production from South Pars' Phases**

Completed Phases			
Ph ase	Capacity (Natural Gas; Condensate)	Participating Companies	Start-up
1	25 mcm/d 40,000 bbl/d	Petronas; Petropars Ltd	2003
2	50 mcm/d	Total; Gazprom	2002
3	80,000 bb/d		
4	50 mcm/d	Eni; Petronas, NIOC	2004
5	80,000 bbl/d		
6	110 mcm/d	Statoil; Petropars Ltd	2008-9
7			
8	158,000 bbl/d		
Future/ Ongoing Phases			
9	50 mcm/d	LG International; OIEC;IOEC	2011-12
10	80,000 bbl/d		
11	50 mcm/d 80,000 bbl/d	NIOC; CNPC	2015-16
12	78 mcm/d 110,000 bbl/d	SonAngol; PdVSA; Petropars Ltd	2013-14
13	50 mcm/d 77,000 bbl/d	Mapna; SADRA; Petro Paydar	2016-17
14	50 mcm/d 80,000 bbl/d	IDRO;NIDC; IOEC	2016-17
15	50 mcm/d	KACH; IOEC; Saaf; ISOICO	2014-15
16	80.000 bbl/d		
17	50 mcm/d	IDRO;OIEC;IOEC	2015-16
18	80.000 bbl/d		
19	50 mcm/d 77.000 bbl/d	Petropars Ltd; IOEC	2017-18
20	50 mcm/d	OIEC	2016-17
21	75.000 bbl/d		
22	50 mcm/d	Petro Sina Arian; SADRA	2015-16
23			
24	77.000 bbl/d		

**Source: Pars Oil & Gas Company (2012)<sup>89</sup>**

In addition to the South Pars field, Iran owns other major gas fields with substantial gas reserves such as North Pars, Kish, Golshan and Ferdowsi. Located in the east of Lavan Island, Kish gas field is estimated to have 1.4 tcm of gas in place.<sup>90</sup> It is known as the

<sup>89</sup> The website last visited in December 2012: <http://www.pogc.ir/Default.aspx?tabid=137>

<sup>90</sup> "Iran's Energy Balance." Ministry of Energy, 2011

“country’s second gas pole” and is expected to produce 10.3 and 31 bcm/yr in the first and second phases of its development.<sup>91</sup> The gas produced is expected to supply domestic and export markets and is planned to connect to IGAT-7 through a 92 km 56-inch pipeline. The development of the field has been started and continued by the Iranian companies and contractors and its first phase is expected to come on stream in 2014. North Pars gas field is another major gas field located 120 km of south-east of Bushehr. The four-phase development plan of the North Pars field has been assigned to the Chinese oil company CNOOC through a buyback contract. Golshan and Ferdowsi are also two other major gas fields with an estimate reserve of 1.4 tcm of gas in place.<sup>92</sup> In December 2007, a 66-month buy-back contract was signed between NIOC and the Malaysian SKS Company for development and production of 610 and 153 mcm/d of gas from Golshan and Ferdowsi fields, respectively.<sup>93</sup> The production from these fields is allocated to the domestic market.

## **2.6. Natural Gas Transmission System**

As mentioned earlier, after the Revolution Iran’s natural gas priority shifted from gas export to domestic consumption. Even during the Iran-Iraq war, the Iranian Government persistently continued the expansion of its national gas grid. Iran has developed an extensive gas pipeline system which includes trunklines, import-export pipelines and distribution networks. The ‘backbone’ of the country’s domestic pipeline system is the Gas Trunkline (IGAT) pipeline series, which transport natural gas from processing plants to end-users both in domestic and export markets. Almost all of these pipelines are fed by the gas produced from the phases of the South Pars project which have already been developed. IGAT-9 and 10 are in planning stage and unlikely to come on stream before 2017. Construction of IGAT-3 to IGAT-8 started after the South Pars development

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<sup>91</sup> Bahmani, H. "Pishraft Matloobe Hafarie Chah-Haye Tose'eye Meidan Gaze Kish ( Development of Well-Drilling Process in Kish Gas Field)." <http://shana.ir/193428-fa.html> , August 2012

<sup>92</sup> "Iran's Energy Balance." Ministry of Energy, 2011

<sup>93</sup> Pars Oil & Gas Company, "South Pars Gas Reaches Iran in summer 2013." <http://pogc.ir/Default.aspx?tabid=94&ctl=Detail&mid=448&Id=10393>, October 2012

project began.<sup>94</sup> In 2010, Iran's high-pressure transmission pipelines reached 33098 km, of which 30781 km is currently operational.<sup>95</sup>

### **IGAT-1**

IGAT-1, 42-inch in diameter, was Iran's first nation-wide transmission pipeline, which was constructed between the Bid-Boland gas processing plant and Astara to export Iran's gas to the Soviet Union.<sup>96</sup> The 1103 km pipeline has a capacity of 32 to 46 mcm/d of gas with 10 compressor stations.<sup>97</sup> The pipeline is divided into two parts: the first part is from the Bid-Boland plant to the 4<sup>th</sup> compressor station close to Isfahan and the second part is from there to the measurement station in Astara.<sup>98</sup>

### **IGAT-2**

IGAT-2 is 900 km of 42 and 58-inch pipeline with a transmission capacity of 60 mcm/d.<sup>99</sup> The pipeline was constructed to supply gas to the northern cities of Iran, including Semnan, Golestan, Mazandaran and Southern Khorasan. According to NIGC, this pipeline has been planned to improve gas transmission infrastructure in the north and north east regions and to reduce the country's further dependence on gas imports from Turkmenistan.<sup>100</sup>

### **IGAT-3**

IGAT-3 is a 1267 km 56-inch pipeline constructed to supply gas from Assaluyeh to Kangan, Saveh and Rasht.<sup>101</sup> Its transmission capacity is 90 mcm/d and it has 9 compressor stations.<sup>102</sup> The pipeline supplies gas to the west and northwest of the

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<sup>94</sup> "Iran's Energy Balance." Ministry of Energy, 2011

<sup>95</sup> *ibid*

<sup>96</sup> "History of National Iranian Gas Company." NIGC, <http://en.nigc.ir/Site.aspx?ParTree=11131515>. 2010

<sup>97</sup> "Iran's Energy Balance." Ministry of Energy, 2011

<sup>98</sup> *ibid*

<sup>99</sup> *ibid*

<sup>100</sup> Owji, J. "Tavafogh Jadid Iran Va Torkamanestan (Iran-Turkmenistan New Deal)." *Shana, NIOC official news website* (27 November 2012)

<sup>101</sup> "Iran's Energy Balance." Ministry of Energy, 2011

<sup>102</sup> *ibid*

country, including Hamedan, Sanandaj, and Zanjan. IGAT-3 also has a 273 km-extension between Saveh and Rash expected to become operational in 2013.<sup>103</sup>

#### **IGAT-4**

IGAT- 4 transports 110 mcm/d of gas from the South Pars and Parsian gas plants to the domestic market.<sup>104</sup> It is a 1145 km 56-inch pipeline divided into two parts: the main part (which came on stream in 2004) is a 351-km pipeline gas to Fars province and connecting to Pol-Kaleh compressor station in Isfahan; the second part includes various pipelines supplying gas to Kerman province (42-inch), Fars petrochemical plant (24-inch), Yazd (40-inch) and Isfahan Mobarakeh (40-inch).<sup>105</sup> To maintain the pressure and maximise transmission capacity, 10 compressor stations have been put in place throughout the pipeline route.<sup>106</sup>

#### **IGAT-5**

The 56-inch IGAT-5 supplies 95 mcm/d of sour gas to the Agha Jari oil field for reinjection from the South Pars phases 6, 7 and 8.<sup>107</sup> The 504 km-pipeline has five compressor stations, including 2 stations in the South Pars region and 3 in the cities of Khormoj, Ab-Pakhsh and Sar-Dasht.<sup>108</sup>

#### **IGAT-6**

IGAT-6, mostly in parallel with IGAT-5, has a capacity of 110 mcm/ d, serving around 30 cities in Bushehr and Khoozestan provinces for domestic consumption and oil field re-injection.<sup>109</sup> It also transfers sweet gas from South Pars phases 9 and 10 to the Bid-Boland

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<sup>103</sup> Owji, J. "Rah-Andazie Do Khate Lole Jadid Saderate Gaz (Operation of Two New Gas Export Projects).", 28 August 2012

<sup>104</sup> "Iran's Energy Balance." Ministry of Energy, 2011

<sup>105</sup> *ibid*

<sup>106</sup> Pars Oil & Gas Company, <http://www.pogc.ir/Default.aspx?tabid=136>, 2012.; Wood Mackenzie (2009), *Iran- Country Overview*. 77(2011)

<sup>107</sup> "Iran's Energy Balance." Ministry of Energy, 2011

<sup>108</sup> Pars Oil & Gas Company, <http://www.pogc.ir/Default.aspx?tabid=136>, 2012.

<sup>109</sup> "Iran's Energy Balance." Ministry of Energy, 2011

processing plant. The pipeline is 610 km long 56-inches in diameter with 4 compressor stations and went into operation in 2008.<sup>110</sup>

### **IGAT-7**

The 902 km, 56-inch IGAT-7 pipeline transfers 110 mcm/d gas from the South Pars phases 9 and 10 to 48 southern towns and cities of Iran including 17 cities in Kerman and Hormuzgan provinces and 31 cities in Sistan and Baluchestan province with the possibility of exporting to the U.A.E., Pakistan and India.<sup>111</sup> The pipeline extends to Gavbandi, Rudan and Kahnooj and ends in Iranshahr. There are two compressor stations which can increase to 11 in case of export to Asian markets.<sup>112</sup>

### **IGAT-8**

IGAT-8, a 1,050 km 56-inch pipeline with 10 compressor stations transporting 110 mcm/d of natural gas from Assaluyeh to the Parsian gas processing plant in Fars province and from there to Isfahan and Qom provinces.<sup>113</sup> IGAT-8 came on stream in 2009 and is planned to reach the north and northeast regions in 2014.<sup>114</sup>

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<sup>110</sup> *ibid*

<sup>111</sup> "Iran's Energy Balance." Ministry of Energy, 2011; Wood Mackenzie (2009), *Iran- Country Overview*. 77(2011)

<sup>112</sup> "Iran's Energy Balance." Ministry of Energy, 2011

<sup>113</sup> *ibid*

<sup>114</sup> *ibid*



Map 2-2- Iran's Natural Gas Transmission System



Source: Adibi & Fesharaki (2010)

## IGAT-9

The 56-inch IGAT-9 is another potential gas export pipeline designed to connect Iran's South Pars gas field to the European markets.<sup>115</sup> The 1863 km IGAT-9 pipeline with 17 compressor stations aims to transfer gas from Assaluyeh to the border city of Bazargan. It has been said that 23 percent of the pipeline project would be handled by Iran and 77 percent by the Turkish partners.<sup>116</sup> A memorandum of understanding (MoU) was signed by the two countries in 2008, which contains cooperation plans and, according to MEES, calls for "the participation of Turkish state petroleum company TPAO in the development of phases 22, 23, and 24 of South Pars, along with its participation in the construction of the 1850 km IGAT-9 gas trunkline from Assaluyeh to Bazargan, near the Turkish-Iranian border."<sup>117</sup> Once completed, the pipeline is planned to export 35 bcm of Iranian gas to Europe via Turkey. The project is said to operate on a Build- Own -Operate (BOO) framework with an estimated investment cost of US\$8 billion.<sup>118</sup> It was originally expected to come on stream in 2014 but the substantial delay in its construction has made its construction unlikely in the near future.

## IGAT-10 (Loop line)

IGAT-10 will transport the processed gas of Fajr treatment plant in Pataveh to Pol-Kalleh in Isfahan. The pipeline is 205 km (175 km is 56-inch and 30 km is 40-inch) and has a transmission capacity of 88 mcm/d.<sup>119</sup> En route, it is planned to supply gas to the north and northwest provinces of Azerbaijan Sharghi and Azerbaijan Gharbi as well as southern provinces of Iran. The pipeline is also designed to compensate for the gas deficit of

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<sup>115</sup> "Iran's Energy Balance." Ministry of Energy, 2011; Wood Mackenzie (2009), *Iran- Country Overview*. 77(2011)

2009, Iran, Country Overview, Wood Mackenzie; Smith (2010), pipeline construction slow for 2010; S.R. Kassaizadeh (2008), Iranian gas prospect. Maxi page: 200

<sup>116</sup> "Turkey and Iran sign gas pact". MEES Vol.51:47. Nicosia, Cyprus: Middle East Petroleum & Economic Publications, 2008

<sup>117</sup> *ibid*

<sup>118</sup> *ibid*

<sup>119</sup> "Iran's Energy Balance." Ministry of Energy, 2011

IGAT-2 pipeline and to free-up some capacity in IGAT-7 for domestic consumption by supplying additional volume of gas for potential export to India and Pakistan.<sup>120</sup>

### **Third Azerbaijan Pipeline**

The pipeline is 470 km of 40 and 48- inch with three compressor stations and has the capacity to transport 40-50 mcm/d via Saveh, Hamedan, Bijar, Takab and Miandoab.<sup>121</sup>

### **North and North-East Pipeline**

The pipeline is 1024 km and 42 and 48-inch in diameter with six compressor stations and consists of two phases: phase one is 418 km between Parchin and Miami and 106 km between Miami and Dasht.<sup>122</sup> The second phase is a 500 km and 48-inch pipeline between Miami and Sang-Bast which transfers 58 mcm/d of gas from the second import pipeline from Turkmenistan to the Shahid Hasheminejad gas processing plant.<sup>123</sup>

## **2.7. Natural Gas Distribution System**

As a result of domestic market expansion policy, Iran has extensively added to its distribution network. In 2012, the aggregate urban and rural distribution network was 225,000 km, supplying gas to more than 15.35 million beneficiaries, including households, commercial and industrial units in 920 cities, 12504 villages and 69 power generation plants.<sup>124</sup> Tehran, Isfahan, Khorasan Razavi and Fars are the top four provinces with most developed natural gas grid.<sup>125</sup> In the period between 2004 and 2010, 13341 km of pipeline was added to the national distribution network, an average pipeline construction of 2223.5 km per year.<sup>126</sup>

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<sup>120</sup> Owji, J. "Rah-Andazie Do Khate Lole Jadid Saderate Gaz (Operation of Two New Gas Export Projects)." 28 August 2012

<sup>121</sup> "Iran's Energy Balance." Ministry of Energy, 2011

<sup>122</sup> *ibid*

<sup>123</sup> Owji, J. "Aghaze amaliat khate looleye shomal vas shomale shargh." Shana, NIOC, 24 November 2011)

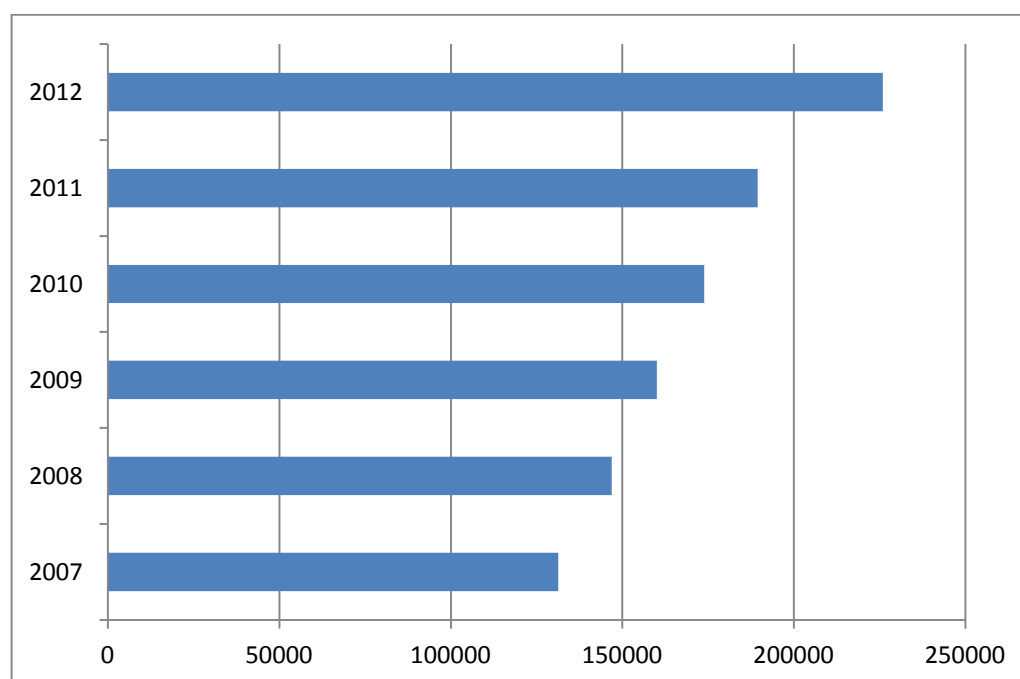
<sup>124</sup> Owji, Javad. "Rah-Andazie Do Khate Lole Jadid Saderate Gaz (Operation of Two New Gas Export Projects)." *Vatan-e Emrooz*, 28 August 2012, p.5

<sup>125</sup> "Iran's Energy Balance." Ministry of Energy, 2011

<sup>126</sup> *ibid*

More than 96 percent and 54 percent of the urban and rural population have access to a gas supply (i.e. 55 million). As shown in Figure 2.4 , only in 2010, the national grid expansion was measured around 17000 km, an increase of 37 percent comparing to that of in 2009 (12366 km).<sup>127</sup>

**Figure 2.4 - Natural Gas Distribution Network in Iran, 2007-2012 (km)**



Source: NIGC (2012), Iran Energy Balance (2011)

## 2.8. Natural Gas Domestic Consumption in Iran

Natural gas consumption in Iran has skyrocketed during the last 25 years, reaching 153.3 bcm in 2011, making the country the third largest gas consumer in the world after the U.S. and Russia.<sup>128</sup> The major reasons for the country's increasing gas consumption have been: low prices charged nationwide with subsidies from the Government; the requirement for re-injection of gas into old oilfields to enhance the rate of recovery; population growth and consequent increase in household and industrial consumption.

<sup>127</sup> "Iran's Energy Balance." Ministry of Energy, 2011

<sup>128</sup> British Petroleum, 'British Petroleum Statistical Review of World Energy', 2012

**Table 2.3- Natural Gas Domestic Consumption in Different Sectors 1980-2010 (bcm)**

<i>Sector</i>	<b>1980</b>	<b>1985</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>
Residential & Commercial	0.9	3.4	3.4	13.1	22.7	37.1	47
Power Generation	2.4	4.1	8.6	13.7	23.7	36.3	45
Industry	0.5	1.5	3.1	6.9	10	15.4	20
Transportation & Agriculture	0	0	0	0	0	0.3	5.9
Energy Sector	0.3	1.1	2.6	3.5	5.1	9.8	11
Reinjection	0						
<b>Total*</b>	<b>4.8</b>	<b>10.2</b>	<b>20.4</b>	<b>40.3</b>	<b>64.4</b>	<b>103</b>	<b>153</b>

\*The total amount is inclusive of gas volume consumed for petrochemical plants, compressor stations, and gas shrinkage and loss.

**Source: Iran Energy Balance (2011)**

In 2010 natural gas constituted 48.53 percent of the country's energy demand of which commercial and public sector accounted for 32 percent, power generators 31 percent, industries 14 percent, the petrochemical sector 11 percent, oil refineries 7 percent and transportation and agricultural sector 5 percent.<sup>129</sup>

### **2.8.1. Residential and Commercial Sector**

The household and commercial sector is the largest sector in Iran's natural gas domestic market, consuming around 32 percent of the natural gas. More than 55 million Iranians have access to natural gas which represents around 75 percent of the population. Heavy dependence of the residential sector on natural gas consumption has caused significant challenges for the supply of gas to other sectors particularly during cold winters. Recent implementation of energy subsidies reform in Iran has, to some extent, prevented the wasteful and inefficient consumption of gas in household sector. (see Chapter 5) In 2010 the natural gas consumption dropped by 1.3 percent and reached 47 bcm. In the

<sup>129</sup> Oil products, electricity (hydro), renewable and coal accounted for 41.31 percent, 9.52 percent, 0.49 percent and 0.16 percent respectively of the country's primary energy balance. "Iran's Energy Balance." Ministry of Energy, 2011

commercial sector, consumption experienced an increase of 4.4 percent over the previous year and stood at slightly less than 6 bcm.<sup>130</sup>

### **2.8.2. Power Generation and Petrochemical Sectors**

Power generation accounts for the second largest share of natural gas consumption. In 2010 the sector witnessed an increase of 3.4 percent, consuming around 45 bcm of gas. Most of the power generation plants in Iran reached the end of their design lives and need to be replaced. As a result, the low energy efficiency rate has caused extensive wasteful energy consumption in the power generation sector.

The petrochemical industry is also a major natural gas consuming sector in the country. Iran has 10 petrochemical plants, 2 of which are located in special economic zones. Development and operation of petrochemical facilities is assigned to the National Iranian Petrochemical Company (NIPC). Founded in 1964, NIPC began its activities by operating a small fertiliser plant. In 2010, it was the second largest producer and exporter of petrochemical products in the Middle East.<sup>131</sup>

### **2.8.3. Industrial, Transportation and Agricultural Sectors**

In 2010, the industrial sector consumed around 20 bcm of gas, showing an increase of 13.7 percent. This was mostly due to the increase in oil product prices which forced the sector to consume more natural gas. The industrial sector has always been facing challenges for the secure supply of its natural gas demands, particularly during cold winters when the priority is given to the residential sector.

Natural gas consumption in the transportation sector has also seen a remarkable increase as a result of the Government's policy of substituting oil fuels with natural gas for vehicles. In 2010, natural gas consumption in the transportation sector increased 61 percent, reaching 5.5 bcm.<sup>132</sup> The policy of shifting to natural gas as a transportation fuel

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<sup>130</sup> "Iran's Energy Balance." Ministry of Energy, 2011

<sup>131</sup> "Annual Report." *National Iranian Petrochemical Company*, 2010

<sup>132</sup> "Iran's Energy Balance." Ministry of Energy, 2011

has encouraged the replacement of over 2.5 million inefficient gasoline and diesel vehicles.<sup>133</sup> More importantly, the conversion of vehicles' engines to natural gas has reduced the need for import of refined petroleum products which today is almost impossible as a result of international sanctions.<sup>134</sup>

In the agricultural sector natural gas consumption has also experienced a gradual increase during last few years. According to Iran's Energy Balance, natural gas consumption in the agricultural sector increased 5.1 percent, representing consumption of 422.6 mcm of gas in 2010.

#### **2.8.4. Gas Re-injection into the Oil Fields**

Gas re-injection is a maintenance technique which is applied in ageing oil fields to prevent the reservoirs pressure from dropping in order to facilitate the recovery of a greater percentage of crude oil. In Iran, natural gas-reinjection technology was first introduced by NIOC in 1971. From 1971-74, a comprehensive study was conducted by a group of reservoir engineers urging natural gas re-injection for Haft-Gol, Gachsaran, Lab-Sefit, Maroun, Agha Jari, Parsi and Bibi-Hakimeh oilfields and was first implemented in 1976-77 in Haft-Gol and Gachsaran oil fields, respectively.<sup>135</sup> In 2002, over a 25-year period since the start of the re-injection, the aggregate injected gas to these oilfields was estimated at around 22.51 and 219.99 bcm, respectively, adding 154 and 2500 million barrels of oil to the country's oil production output.<sup>136</sup> Another study conducted on eight other oilfields in 1975 also showed that re-injection of 250 mcm/d of natural gas could result in a total oil recovery of 35 billion barrels by 2000.<sup>137</sup>

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<sup>133</sup> *ibid*

<sup>134</sup> Korin, A, and Luft, G. "Ahmadinejad's Gas Revolution: A Plan to Defeat Economic Sanctions." Institute for the Analysis of Global Security (IAGS), December 200, p.7

<sup>135</sup> Dehghani, T, *Model Hadeaxar Sazi Manafe Eghtesadi Hasel AZakhayer Gazi Iran (a Model for Maximisation of Economic Benefits Resulting from Iran's Natural Gas Resources)*, 1387 (2007)

<sup>136</sup> *ibid*

<sup>137</sup> Saeedi, A.M. "Barnameh-Rizi Estrategic Baraye Modiriate Makhazene Naft Va Gaz Keshvar (Strategic Planning for Management of Country's Oil and Gas Reservoir)." *Markaz Pajoohesh-haye Majlis (Majlis Research Centre)* 2002, no. 34 (2002); Mosleh, K. *Estefadeye Behine Az Manabe Gazi Iran (Optimal Usage of Iran's Natural Gas Resources)*: Majlis Research Centre 2009 (1387)

In 2012, Ministry of Petroleum had 34 re-injection projects in oil-rich regions which 18 are located in the southern part of the country. Phases 6, 7, and 8 of the South Pars are designated to supply gas for reinjection purposes. In 2009, Iran completed the construction of a 56-inch, 508 km gas pipeline from the South Pars to the Agha-Jari oilfield. This pipeline is planned to deliver up to 40.3 bcm/yr of gas for re-injection to oil fields located in the south and southwest of the country (20.8 bcm/yr for Agha-Jari and 19.5 bcm/yr for other oil fields). The gas re-injection in Agha-Jari has been operational since 2010, though the injected capacity has been significantly lower than the planned volume.<sup>138</sup>

A study of the history of gas reinjection in Iran shows that re-injection projects were never implemented as planned either due to unavailability of enough gas for re-injection purposes as a result of growing domestic demand or the high cost of injection process or both. In the years following the Iran-Iraq war, reconstruction problems and challenges resulting from the lack of a comprehensive plan and a strategic commercial interaction between the gas producing company, NIOC, and the distribution company, NIGC, led to the Government's failure to sufficiently re-inject gas into oilfields.

Today, there is an urgent requirement for re-injection of gas into oilfields due to both deteriorating conditions of the oilfields and rising oil prices (see Section 6.3.2.1). Iran's oil production capacity has been decreasing at a rate of around 300-600 thousand barrels per annum.<sup>139</sup> According to the Fourth Five-Year Development Plan, the required volume for natural gas re-injection was estimated at around 149 mcm/d, while the actual reinjection was only 88.40 mcm/d in 2010. For onshore oilfields gas re-injection and for

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<sup>138</sup> In 2011, the aggregate gas volume re-injected into the Agha-Jari oil field was 5bcm. *Shana*, "Transmission of 7.5bcm of Gas for Reinjection into 3 Oil-Rich Regions." <http://www.shana.ir/184322-fa.html>, 7 February 2011.

<sup>139</sup> 'Baresi Oft Tolide Makhazene Naftie Keshvar Va Manafe Melli (Analysis of Depletion Rate of Oil Fields' Production and Country's National Interest)' *Majlis Research Centre*, 2009



off-shore fields a mixture of water and gas re-injection, have been introduced as the most effective re-injection fluids.

**Table 2-4- Natural Gas and Water Injection into Oilfields (2000-2010)**

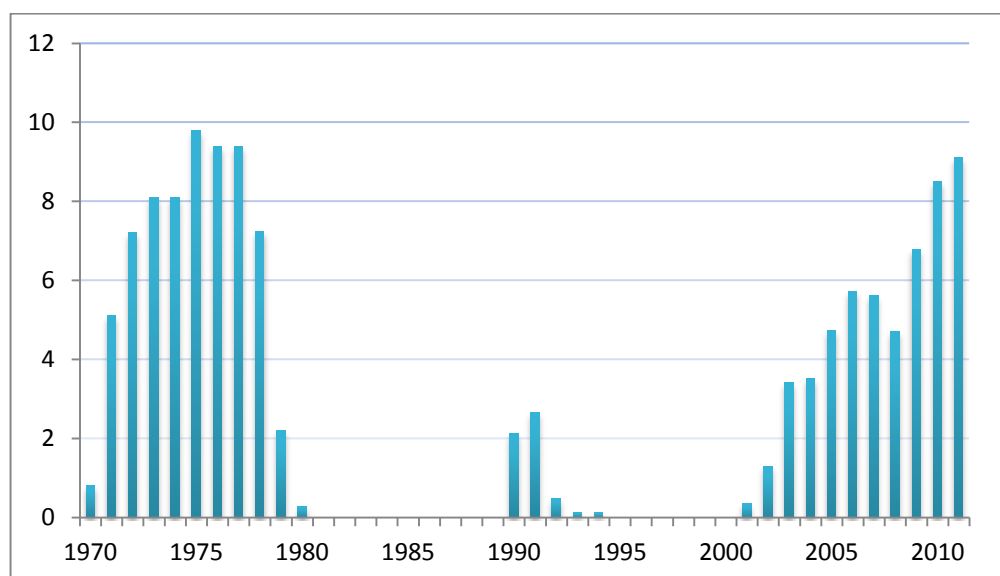
Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
NG (mmcm p/d)	71.1	75.4	72.3	77.8	80	77.2	73	87.7	77.7	79	88.4
Water (Mbbl/yr)	-	106	92.1	99.4	75.6	98.9	130.3	132.9	420.6	152	152.5

**Source: Iran's Energy Balance (2011)**

## **2.9. Natural Gas Export Projects**

### **2.9.1. Pipelines**

After the Revolution, Iran's rigorous attempt to develop new gas export projects goes back to the Khatami era, i.e. 1997-2005. The export plans were in line with the development of the South Pars field and Iran's response position. The plans were also consistent with the Khatami Government's overall policy of reducing tensions between Iran and the international community and promoting the country's presence in international economic and trade transactions. It was during this era that many gas industry development plans, including export to Turkey, conclusion of contracts for construction of LNG terminals, and development of the South Pars gas field were implemented. However, in the mid 2000s, following the coming to power of Mahmood Ahmadinejad and the 7<sup>th</sup> Parliament, opposition against development of gas export intensified. The harsh, and sometimes hostile, stand of Ahmadinejad's Government against the international community, created tension between Iran and the West which virtually eliminated prospects for further development of gas export projects.

**Figure 2.5- Iranian Natural Gas Export 1970-2011 (bcm/yr)**

**Source: International Institute for Energy Studies (2008), Iran Energy Balance (2011), BP Statistics (2012)**

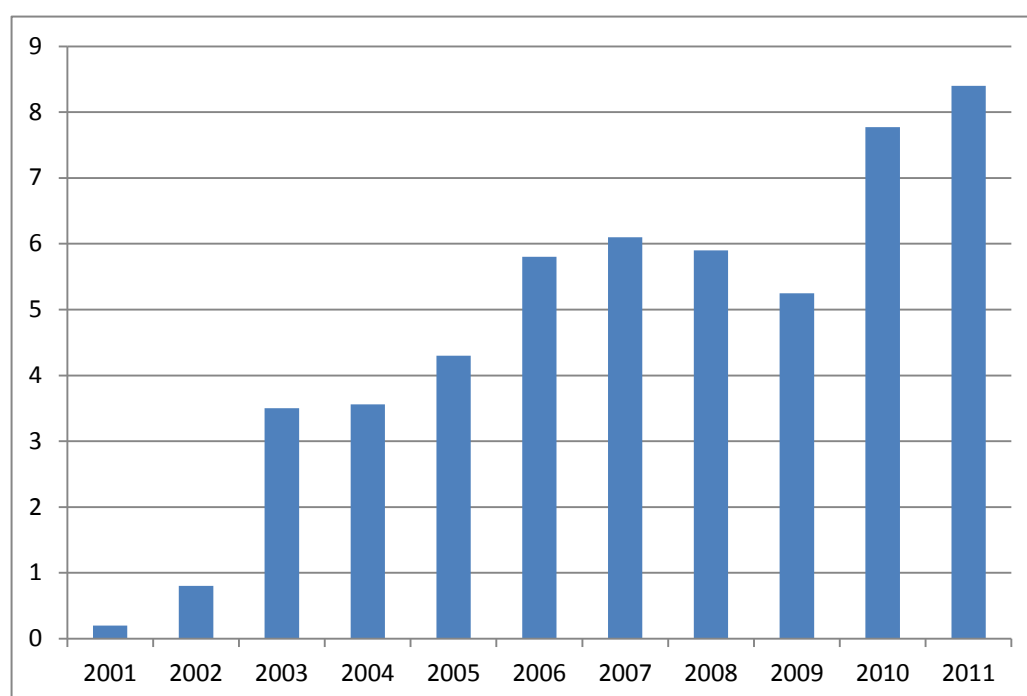
#### **2.9.1.1. *Iran-Turkey Gas Export Project***

In August 1996, NIGC signed a 23-year contract with the Turkish BOTAŞ Company for export of 10 bcm/yr of gas to Turkey via pipeline (an aggregate export of 228 bcm). The pipeline is 40-inch and 253 km and transfers gas through the border city of Bazargan in Iran to Dogubeyazit in Turkey.<sup>140</sup> The agreement provided for the initial export of 4 bcm of gas in 2002 and its gradual increase to 10 bcm in 2007. When the gas export started in December 2001, the actual volume was only 357 mcm, much lower than the volume initially agreed upon by the parties (see Figure 2.7).<sup>141</sup> The gas trade has never reached to its designated volume during the first few years of export. Only recently Iran managed to export around 9 bcm in 2011 as a result of the coming on stream of the South Pars' new phases.<sup>142</sup>

<sup>140</sup> "Iran's Energy Balance." Ministry of Energy, 2011

<sup>141</sup> Kinnander, E. "The Turkish-Iranian Gas Relationship: Politically Successful, Commercially Problematic." 2010

<sup>142</sup> "Iran's Energy Balance." Ministry of Energy, 2011

**Figure 2.6- Iran's Gas Export to Turkey 2001-2011 (bcm/yr)**

**Source: BP Statistics Review (2001-2012)**

Export of Iran's natural gas to Turkey has been interrupted several times particularly during the times of spiking domestic demand in Iran when the country was hit by cold winter weather or by attacks on the pipeline by regional terrorist groups. Iran has also reportedly been demanding comparatively high prices, while gas quality and quantity often fall below the agreed terms.<sup>143</sup> In 2010, following a dispute over a 'take or pay' clause regarding the price and amount agreed upon between the two countries, Turkey took the issue to an international arbitration tribunal seeking compensation for losses incurred as a result of supply failure, and demanding modifications of the contractual terms. The dispute actually began in 2002 when Turkey halted import of Iranian gas due to, according to Turkish side, unsatisfactory technical specification of the gas. The actual

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<sup>143</sup> Babali, T., 'The Role of Energy in Turkey's Relations with Russia and Iran', *The Turkey, Russia and Iran Nexus: Economic and Energy Dimensions*. Ankara, Turkey, March 2012.p. 5

reason, however, was believed to be lack of gas demand in Turkey at the time and the Turkey's interest in renegotiating the price and terms of the 'take or pay' clause.<sup>144</sup>

As reviewed above, the gas trade between Iran and Turkey has embedded many impediments. The parties' gas deal interactions evidently lack trust as they failed to prove their long-term reliability as gas importer and exporter. This has, to a large extent, affected the prospect of Iran being perceived as a major and reliable exporter to European markets.

#### **2.9.1.2. *Iran- Armenia Gas Contract***

Iran signed a gas export contract with Armenia in exchange for Armenian electricity in 2004. The contract provides for the supply of 1.1 to 2.3 bcm/yr of gas for a 20-year period.<sup>145</sup> The Iran-Armenia gas pipeline is 113 km and 30-inch in diameter, connecting Tabriz to the Armenian border. Gas export to Armenia started in 2009 after two years delay reaching 1 bcm in 2011.<sup>146</sup> In exchange for every cubic meter of gas, Armenia exports 3kWh of electricity to Iran. In March 2012, further negotiations started with Armenian counterparts for a 6-fold increase of Iran's gas export to Armenia, which would increase the total export capacity to around 6.5 bcm/yr.<sup>147</sup>

#### **2.9.1.3. *Iran-Azerbaijan Gas Contract***

Based on a 25-year swap contract with Azerbaijan, Iran started exporting an average of 300-350 mcm/yr of gas to Azerbaijan in 2005 through a 16-inch pipeline connecting Jolfa (on the Iranian border) to Nakhchivan.<sup>148</sup> In exchange, Azerbaijan supplies the same volume of gas to Iran's northern city of Astara. The Iran-Azerbaijan gas swap deal was a result of a prolonged territorial dispute between Azerbaijan and Armenia preventing the former's domestic pipeline system from reaching Nakhchivan.

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<sup>144</sup> Kinnander, E. "The Turkish-Iranian Gas Relationship: Politically Successful, Commercially Problematic." 2010

<sup>145</sup> "Iran's Energy Balance." Ministry of Energy, 2011; Wood Mackenzie (2009), *Iran- Country Overview*. 77(2011)

<sup>146</sup> *ibid*

<sup>147</sup> *ibid*

<sup>148</sup> "Iran's Energy Balance." Ministry of Energy, 2011

#### **2.9.1.4. Iran-UAE Gas Contract**

In 2001, NIOC and Crescent Petroleum Company (CPC) signed a 25-year contract for export of 5.2 bcm/yr of sour gas from the Salman field to the Emirate of Sharjah.<sup>149</sup>

Although the initial completion date of the project was December 2005, there have been substantial delays. In addition to a price dispute between the two companies, the Iranian contractor, Petro Iran, delayed the development of the Salman field and the construction of the export pipeline to the Mubarak oil platform for over three years. Iranian officials and members of Parliament opposed the price formula for the UAE gas export which was set around US\$1 MMBtu. According to Adibi and Fesharaki, the price was even lower than initial Qatari Dolphin prices for export of gas to Abu Dhabi and Dubai.<sup>150</sup>

#### **2.9.1.5. Future Gas Export Pipeline**

##### **2.9.1.5.1. Iran-Pakistan-India Pipeline**

The Iran-Pakistan-India pipeline also known as the 'Peace Pipeline' is another controversial export line planned to export Iranian gas from South Pars to the Asian Subcontinent. With a proposed 2800 km and around 40 bcm/yr of export capacity, pipeline construction has been stalled in both Pakistan and India due to various problems including prolonged political tension between two countries, pricing disputes and the U.S. Government's objection to the project.<sup>151</sup> Consequently, in 2007, India decided to suspend negotiations for the development of the project.<sup>152</sup> India has become more interested in the U.S. backed pipeline stretching from Turkmenistan to Afghanistan and Pakistan.

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<sup>149</sup> Adibi, S, and Fesharaki, F. "The Iranian Gas Industry" In *Natural Gas Markets in the Middle East and North Africa*, 2011

<sup>150</sup> Ibid. Failure of Iran-UAE gas export deal can also to a large extent be attributed to Iran and the UAE political dispute over the ownership of the trio islands of the Persian Gulf.

<sup>151</sup> Adibi, S, and Fesharaki, F. "The Iranian Gas Industry" In *Natural Gas Markets in the Middle East and North Africa*, 2011; Ebrahimi, I., *Saderat-E Gaz-E Iran: Forsat-Ha Va Tahdid-Ha (Iran's Gas Export: Opportunities and Threats)*, Edited by Mostafa Azari: Research Institute of Tadbir-e Eshtesad, 1386 (2006)

<sup>152</sup> The U.S. has rigorously opposed to further development of the project and encouraged India to withdraw from the gas import project from Iran, suggesting an alternative of constructing nuclear power plants for India. Adibi, S, and Fesharaki, F. "The Iranian Gas Industry" In *Natural Gas Markets in the Middle East and North Africa*, 2011

On Iranian territory, the pipeline will be the extension of IGAT-7 to the Pakistani border, avoiding construction of a new parallel pipeline.<sup>153</sup> The pipeline in Pakistan is planned to start from southern Baluchistan and proceeds to Nawabshah in Sindh province. The pipeline's length in the Pakistani territory is expected to be around 750 km. Pakistan has so far been unable to secure funding for the project. It has approached foreign companies including OAO Gazprom, International Petroleum Investment Co., and China National Petroleum Corp without success. Iran and Pakistan, in the absence of India, finalised the gas sales and purchase agreements in 2009. The initial pricing formula was based on 47 percent linkage to Japan Crude Cocktail (JCC).<sup>154</sup> The new formula is 79 percent linked to the JCC price which at an average oil price of around US\$100 per barrel as of in 2012, means that Pakistan should pay around US\$14.5 MMBtu. Adding transportation and transit fees, the final gas price jumps to around US\$16 MMBtu which is highly unlikely to be affordable for Pakistan.<sup>155</sup> There are also other problems which make completion of the project unlikely in the near future. As the project is planned to continue without India, some believe that it is no longer economically viable as there is virtually no chance for further expansion of the pipeline beyond the Pakistani borders.<sup>156</sup> Also the availability of other alternatives, including the potential export of Qatari LNG and the construction of the Western-backed Turkmenistan-Afghanistan-Pakistan pipeline, has cast doubt over the future of the project.<sup>157</sup>

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<sup>153</sup> "Country Analysis Briefs: Iran ". Energy Information Agency, the U.S. Department of Energy <http://www.eia.gov/countries/cab.cfm?fips=IR>, February 2012

<sup>154</sup> Nicknamed the "Japan Crude Cocktail", the Japan Customs-cleared Crude (JCC) is the average price of customs-cleared crude oil imports into Japan.

<sup>155</sup> Adibi, S, and Fesharaki, F. "The Iranian Gas Industry" In *Natural Gas Markets in the Middle East and North Africa*, 2011

<sup>156</sup> Davoodi, M., *Baresie Ta'sire Avamele Mohiti Va Estratejihaye Monaseb Dar Saderate Gaze Iran (Analysis of Circumferential Elements and Proper Strategies for Iran's Natural Gas Export)*., Azad Tehran University, 1388 (2008)

<sup>157</sup> *ibid*

#### 2.9.1.5.2. Iran-Europe Gas Export Pipelines

**Nabucco** was, perhaps, the most promising pipeline project for the export of Iran's gas to Europe.<sup>158</sup> In January 2004 Iran signed a Memorandum of Understanding (MoU) with the Nabucco project leader OMV of Austria and its 50 percent-owned Austrian gas marketing arm EconGas to assess the flow of Iranian gas in the project, as well as the upstream development cooperation with Iran. However, a few years later, as a result of international sanctions, it was announced that the Nabucco project would proceed without Iranian gas.<sup>159</sup>

Another gas export project to Europe is the 520-km **Trans Adriatic Pipeline (TAP)** which is planned to link Iran to Greece, Albania and Italy via Turkey. Gas export to the Swiss market is also expected to be done through the same pipeline. A 20-year gas purchase contract between the Swiss-based EGL Company and NIGEC was signed in 2008 for export of 5.5 bcm/yr of Iranian gas to the Swiss market.<sup>160</sup> It was reported that the export to the Swiss market can start by using the existing infrastructure which exports Iran's gas to Turkey. However, as a result of the U.S. Government's pressure on Switzerland and the E.U. ban on Iran's gas import to Europe, the project needs to proceed without Iranian gas.

Another potential export project is the **Iran-Iraq-Syria-Mediterranean Pipeline** for which a MoU was signed between Iran and Syria in 2011 to finalise a gas export deal through Iran, Syria and the south of Lebanon to Mediterranean-Europe. The pipeline capacity is 110 mcm/d requiring investment of US\$10 billion.<sup>161</sup> The decision to build this pipeline, also known as the *Islamic pipeline*, was taken when Iran was excluded from the Nabucco pipeline. The Islamic pipeline is 1500 km, of which 490 km will be

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<sup>158</sup> Nabucco is backed by Austria's OMV, Hungary's Mol, Turkey's Botas, Romania's Transgas and Bulgaria's Bulgargaz.

<sup>159</sup> Adibi, S. and Fesharaki, F. "The Iranian Gas Industry" In *Natural Gas Markets in the Middle East and North Africa*, 2011

<sup>160</sup> *World Gas Intelligence*, "Uncertainties Behind EGL's Iran Gas Buy." 19 March 2008.

<sup>161</sup> Owji, J. "Rah-Andazie Do Khate Lole Jadid Saderate Gaz (Operation of Two New Gas Export Projects)." 28 August 2012

constructed in Iraq and 600 km in Syria.<sup>162</sup> According to the deputy minister, Javad Owji, the construction of the pipeline both in the Iranian and Iraqi territories has already been started and 25 percent of the project is completed in Iran.<sup>163</sup> However, it is increasingly unlikely that the project makes significant progress mostly due to the political turmoil in Syria in 2012 and strong possibility of the collapse of Assad regime which has had strong political and trade ties with Iranian Government.

There is also another proposed pipeline route for exporting Iran's gas to Europe through Armenia and Ukraine. However, there is doubt over the profitability of this project due to the lack of strong markets and economic infrastructure in these two countries, and Russia's relatively strong influence over the region's transit pipelines.<sup>164</sup>

#### 2.9.1.5.3. Export to the GCC Countries

In addition to the Emirates, there have also been other efforts to export Iran's gas to other GCC countries including Kuwait and Oman. In 2004, during the OPEC Ministerial Conference, Iran and Kuwait signed an agreement worth US\$7 billion for the export of Iran's gas to Kuwait for 25 years.<sup>165</sup> Also the joint natural gas field of Hengam between Iran and Oman brought the parties to the negotiation table in 2000 which eventually led to conclusion of a contract for joint development of the field and the export of 10 to 20 bcm/yr of gas to Oman.<sup>166</sup> None of these projects, however, made any significant progress.

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<sup>162</sup> *ibid*

<sup>163</sup> *ibid*

<sup>164</sup> Davoodi, M., *Baresie Ta'sire Avamele Mohiti Va Estratejihaye Monaseb Dar Saderate Gaze Iran (Analysis of Circumferential Elements and Proper Strategies for Iran's Natural Gas Export)*, 1388 (2008)

<sup>165</sup> *ibid*

<sup>166</sup> *ibid*



**Table 2-5- Gas Pipeline Export Projects (2001-2015)**

	Project	Requested gas volume or transmitting line's capacity, billion cu m/year	Status	In service
Gas-sale contracts	1. Turkey	7-10	Gas export launched in 2001 and has reached nearly 10 billion cu m/year since 2007	2001
	2. Azerbaijan gas swap with Nakhchivan	0.3-0.35	Exchange operation is under way	2005
	3. Iranian gas-Armenian electricity barter	1.1-2.3	Contract has been signed and national gas company undertook operations.	2007
Gas-purchase contracts	1. Turkmenistan-Phase 1	2-8	In progress	—
	2. Turkmenistan-Phase 2	To 14	In progress	Since 2007
Concluded contracts and subject to export	1. Pakistan	21.5	Gas sale and purchase agreement signed; operation agreement signed	2013-14
	2. Swiss EGL	0.3-1.5 within Phase 1 2-4 within Phase 2	Gas sale and purchase agreement signed; operation agreement signed	2009-10 2011-12
Projects being negotiated	1.	30	Negotiations adjourned by Indian party	2013-14
	2.	13.7	Term Sheet signed	2011
	3.	28	Term Sheet signed	2013
	4.	28	MOU initialed and confirmed FA signed; Term Sheet proposed	2013
	5.	8.6	Term sheet submitted by ministers to Kuwaiti party	3 years since contract
	6.	—	MOU signed by Iranian and Turkish ministers of oil and gas in Ankara. Preliminary feasibility studies carried out.	—
	7.	—	Under consideration	—
	8.	5.5-13.7	MOU, CA signed	2015

Source: NIGC (2008)

### 2.9.2. Liquefied Natural Gas (LNG)

Iran's post-revolution initiative to develop its LNG plans resumed in late 1990s when the country started negotiations with some European and Asian companies to construct several LNG projects, including Iran LNG, Pars LNG and Persian LNG. Iran planned to produce LNG from South Pars phases 11-14 through a partnership between NIOC or its subsidiaries such as NIGEC with foreign companies.

### 2.9.2.1. *Iran LNG*

The Iran LNG project consists of two 5.4 Mt/yr trains and is located in the port of Bandar Tombak, 50 km from Assaluyeh.<sup>167</sup> The gas for the project is provided from phase 12 of the South Pars. The project is owned by NIGEC (49 percent), the NIOC Pension Fund Co (50 percent), and the NIOC Pension Investment Fund Co (1 percent).<sup>168</sup> Iran LNG's feasibility study was first conducted in 1996 by Linde, GES and OIEC. In 1997, the study was completed by Daewoo and JGC and eventually reviewed and finalised in 2000 by the Iran Oil Engineering and Construction Company.<sup>169</sup> Iran LNG is the most advanced LNG project in Iran (more than 55 percent physical completion) and is managed by the NIOC's subsidiary, Iran LNG Ltd (ILG).<sup>170</sup> Based on the latest news, the project is expected to come on stream in late 2014. However, the construction of the liquefaction plant, the most important part of an LNG project, has not made any progress as a result of access restriction to the required technologies and lack of capacity of the Iranian and Chinese contractors to provide such technologies.<sup>171</sup> In addition, the Iran LNG Company has not had any success in marketing its LNG production. Some contracts which were signed a few years ago, such as export to India, were reviewed and cancelled due to low gas prices. There are also other preliminary development and sales and purchase contracts with Austrian (OMV), Chinese (Sinopec) and Indian (ONGC) companies which are highly unlikely to materialise.<sup>172</sup>

### 2.9.2.2. *Pars LNG*

Pars LNG is located in Tombak Port in Assaluyeh and its feed gas comes from phase 11 of South Pars. The shareholders of the project are the NIOC (50 percent), Total (40

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<sup>167</sup> "Iran's Energy Balance." Ministry of Energy, 2011

<sup>168</sup> *ibid*

<sup>169</sup> Pardeli, B., *Tahlil Hazine Fayedeye Eghtesadi Asarat Tabdile Gas Tab'i Be LNG (Cost-Benefit Analysis of Converting Gas to LNG)*, 1387 (2008)

<sup>170</sup> Kassaizadeh, S.R. "Zanjireyeh Tolid LNG (LNG Production Chain)." *Iranian LNG Conference*. Tehran, 2011

<sup>171</sup> Adibi, S, and Fesharaki, F. "The Iranian Gas Industry" In *Natural Gas Markets in the Middle East and North Africa*, 2011

<sup>172</sup> *ibid*

percent) and Petronas (10 percent).<sup>173</sup> The project includes two liquefaction plants with a capacity of around 5 Mt/yr each. The output of Pars LNG was expected to reach markets of Japan, South Korea, UK and France. The withdrawal of Total and Petronas from the project in 2008, as a result of mounting international sanctions, caused the Iranian Government to cancel the project in 2010.<sup>174</sup>

### **2.9.2.3. Persian LNG**

Persian LNG is also located in Tombak Port and consists of two liquefaction plants with a total production capacity of 16.2 Mt/yr. NIGEC, Shell and Repsol hold 50 percent, 25 percent and 25 percent share in the project, respectively. The plants feed gas comes from South Pars phases 13 and 14. The project consists of two phases; the first phase which includes two units for sweetening and condensate extraction and one unit for LNG production. The second phase, in addition to sweetening and condensation units, includes another LNG train.<sup>175</sup> Shell and Repsol were also engaged with marketing the LNG to India and Europe. The prices for gas were expected to be linked to a crude oil basket, including JCC and Brent but not at a fixed price. Industry sources reported that NIOC had offered gas to Shell from South Pars at a wellhead price of US\$0.7 MMBtu.<sup>176</sup> The project, however, was cancelled due to the international sanctions and withdrawal of foreign partners from the project in 2007.<sup>177</sup>

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<sup>173</sup> Kassaizadeh, S.R. "Zanjireyeh Tolid LNG (LNG Production Chain)." *Iranian LNG Conference*. Tehran, 2011

<sup>174</sup> Adibi, S, and Fesharaki, F. "The Iranian Gas Industry" In *Natural Gas Markets in the Middle East and North Africa*, 2011

<sup>175</sup> Omidvar, H. "Iranian LNG, Natural Gas Export Plans Outlined." *Oil & Gas Journal*, (January 2010)

<sup>176</sup> Davoodi, M., *Baresie Ta'sire Avamele Mohiti Va Estratejihaye Monaseb Dar Saderate Gaze Iran (Analysis of Circumferential Elements and Proper Strategies for Iran's Natural Gas Export)*, 1388 (2008)

<sup>177</sup> Adibi, S, and Fesharaki, F. "The Iranian Gas Industry" In *Natural Gas Markets in the Middle East and North Africa*, 2011

**Table 2-6- Iran's LNG Projects (2001-2015)**

Project	Operator	Shareholders	Objectives	Field
Pars LNG	Persian LNG Co.	NIGEC representing NIOC (50%), Total (40%), Petronas (10%)	10 million tpy	Phase 11 of South Pars Gas field
Persian LNG	Persian LNG Co.	NIGEC representing NIOC (50%), Shell (25%), Repsol (25%)	16.2 million tpy; two trains	Phase 13-14 of South Pars gas field (Phases may be subject to change in view of NIOC plans to expand the South Pars phases.)
Iran LNG	Natural Iranian Gas Liquefaction Co. (Iran LNG)	NIGEC representing NIOC (49%), Pension Fund, Saving and Welfare of Oil Industry (1%), remissible stocks to LNG buyers and investors (40%)	11 million tpy; two trains	Sour gas extracted from South Pars Phase 12
Golshan & Ferdowsi LNG projects	Malaysian Petrofield Co.	Malaysian Petrofield 100% investment	Golshan & Ferdowsi field expansion; 10 million tpy; two trains	Golshan & Ferdowsi gas fields
North LNG project	CNOOC	CNOOC 100% investment	North Pars field expansion; 20 million tpy; 4 trains	North Pars gas field

**Source: NIGC (2008)**

#### **2.9.2.4. Other LNG projects**

In addition to the major LNG projects reviewed above, agreements were reached with some Asian companies for construction of additional plants. For most of these potential projects, no actual physical developments have been reported, not to mention that some signed MoUs have already been expired.<sup>178</sup> The **North Pars** project is for example one where NIOC signed a MoU with the China National Offshore Oil Cooperation (CNOOC) for development of the field and export of 20 Mt/yr of LNG. Although a buyback contract was signed in 2008, due to the political pressures and the Chinese company's lack of technical expertise little hope remains for significant development of the project. **Qeshm LNG** is another project for which NIOC signed an agreement with the Australian LNG Ltd Company in December 2006 for production of 3-3.5 Mt/yr of LNG in Qeshm Island. However, as the Australian counterpart has no experience in construction and development of such projects, it is unlikely this can proceed. **Golshan LNG** is another project for which NIOC signed a contract with the Malaysian company SKS Venture for production of 10 Mt/yr of LNG from Golshan and Ferdowsi gas fields. The development of the fields is also assigned to the same Malaysian company based on a 7-year buyback

<sup>178</sup> *ibid*

contract. Based on the contract, NIOC is responsible for marketing of 5 Mt/yr of LNG and the sale of remaining capacity is tentatively assigned to SKS.<sup>179</sup> Another potential LNG plan is **Lavan LNG** for which the Iranian Offshore Oil Company (IOOC), one of the NIOC's subsidiaries, has been negotiating with a Polish company, PGNiG, for the development of Lavan gas field with the prospect of LNG export. The LNG plants production capacity is estimated at around 2-3 Mt/yr. However, considering the current state of negotiations, it is likely that the Lavan LNG project will also fail.

## 2.10. Natural Gas Imports

Poor transmission facilities in the northeast of Iran and its inability to produce an adequate volume of gas forced Iran to start imports of gas from Turkmenistan. The 25-year contract signed in 1995 provided for the import of 8 bcm/yr of gas, allocating 35 percent of total supply as re-payment of Iran's contribution to construction of the pipeline.<sup>180</sup> Imports from Turkmenistan started in 1997 through a 200 km and 40-inch diameter pipeline which stretches from Korpedzhe in Turkmenistan to Kurd-Kui in Iran.<sup>181</sup> Volumes were initially 0.4 bcm and reached around 6.5 bcm in 2010 when the second import pipeline from Turkmenistan was inaugurated. It is a 35 km and 48-inch pipeline, constructed between Dauletabad in Turkmenistan and the Shahid Hasheminejad gas processing plant, and is connected to the North and North East pipeline in Sang-Bast region in Khorasan Razavi.<sup>182</sup> The new pipeline increases Iran's gas import capacity to 14 bcm/yr.<sup>183</sup> According to BP Statistics, the gas import volume from Turkmenistan reached 10.2 bcm in 2011.<sup>184</sup>

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<sup>179</sup> *ibid*

<sup>180</sup> "Iran's Energy Balance." Ministry of Energy, 2011

<sup>181</sup> *ibid*

<sup>182</sup> *ibid*

<sup>183</sup> Owji, J. "Aghaze amaliat khate looleye shomal vas shomale shargh." Shana, NIOC, 24 November 2011)

<sup>184</sup> British Petroleum, 'British Petroleum Statistical Review of World Energy', 2012

Disputes over pricing have caused gas supply cut offs to Iran on several occasions - with the most recent case being in November 2012.<sup>185</sup> It is difficult to ascertain the exact price Iran pays for its natural gas imports from Turkmenistan; however analysis published by PFC Energy shows that Iran paid US\$9-10 per MMBtu in the first half of 2009.<sup>186</sup> Although the pricing terms were changed in the second half of 2009 and Iran now pays an oil-linked price for its imports, the Turkmenistan Government is still dissatisfied; hence, it is likely that future halts in supply of gas to Iran, particularly, by start of cold weather happen again.

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<sup>185</sup>Owji, J. "Tavafoogh Jadid Iran Va Torkamanestan (Iran-Turkmenistan New Deal)." *Shana, NIOC official news website* (27 November 2012)

<sup>186</sup> Cited in "Country Analysis Briefs: Iran ". Energy Information Agency, the U.S. Department of Energy <http://www.eia.gov/countries/cab.cfm?fips=IR> February 2012

## **Part Two- Diagnosis of Challenges Affecting the Development of the Iranian Natural Gas Industry**

### **3. Chapter 3- Political Challenges: International Sanctions and Politicisation of the Petroleum Sector**

#### **3.1. Introduction**

The study of the Iranian petroleum industry is strongly affected by U.S. and international sanctions. Targeting the country's vital segment of the economy, i.e. the oil and gas sector, sanctions have been put in place as a response to Iran's allegedly hostile foreign policy and ambitions over development of its nuclear programme. The creeping sanctions, which initially started in the form of U.S. unilateral sanctions in mid 1990s, did not meet their objectives until late 2000s when they were supplemented by EU multilateral and UN international sanctions. Due to the prevailing consensus over their imposition, these collective sanctions have placed dramatic impact on the development of the country's oil and gas sector which will be studied in more detail in this Chapter.

Besides international sanctions, the Iranian petroleum sector has been chronically affected by domestic politicisation, causing uncertainty over the country's petroleum sector's decision-making process and confusion over its overall development policies. A historical account of the political events affecting the industry since the discovery of oil in the early 1900s, shows how the fear of foreign intervention pushed the country towards a situation in which domestic political interventions have caused politicisation of the oil and gas sector.

This Chapter consists of two parts, reviewing and examining the domestic and international political challenges influencing the development of Iran's energy sector. The first part focuses on the industry's politicisation and the background to the domestic political intervention in the petroleum sector; and in the second part, international sanctions and their impact on the Iranian economy and its petroleum industry will be reviewed.



### **3.2. Domestic Politics and the Impact on Politicisation of the Petroleum Industry**

The political discussion over challenges of Iranian oil and gas industry cannot only be confined to U.S. and international sanctions. Since the discovery of oil in the early 1900s, the petroleum industry has been chronically affected by domestic politicisation. The study of Iran's petroleum history encompasses handful concession contracts in which exclusive privileges were given to foreign participants. The foreigners' intervention in Iran's interior affairs to secure cheap and easy access to country's petroleum resources has been widely perceived as a violation of the nation's sovereignty and aroused negative sentiments towards foreign companies' involvement in the development of the industry. Hence, a careful analysis of the historical background of the Iranian oil industry is required to show how the fear of foreign exploitation of the country's national wealth impacted the policy making processes and drove the industry towards a politically rather than a commercially-oriented sector.

#### **3.2.1. A Historical Overview of the Petroleum Sector's Political Sensitivity**

A critical component of the Iranian petroleum industry is the earliest days of oil production in Iran, when a concession was concluded for exploration and development of Iranian oil resources which substantially favoured foreign interests. The history of Iran's oil industry dates back to 1901, when Mozaffar-al-Din Shah of Qajar granted a 60-year oil extraction and production concession to a British speculator, William Knox D'Arcy in all areas of the country except the five northern provinces bordering Russia.<sup>187</sup> The harshness of D'Arcy Concession's provisions can be found in the contract's most controversial article stating:

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<sup>187</sup> The vicinity of Azerbaijan, Gilan, Mazandaran, Khorasan and Astarabad to Russian borders and in order to recognise Russia's influence and prevent its opposition to the concession, these regions were excluded from the contract. Fakhimi, G., *30 Sal Naft-e Iran-Az Melli Shodan Ta Enghelabe Eslami (30 Years of Iran's Oil- from Nationalisation to Revolution)*. Tehran: Mehr Andish, 2008

*“The Government of His Imperial Majesty the Shah grants to the concessionaire by these presents a special and exclusive privilege to search for, obtain, exploit, develop, render suitable for trade, carry away and sell natural gas, petroleum, asphalt and ozokerite<sup>188</sup> throughout the whole extent of the Persian Empire for a term of sixty years as from the date of the signing.”<sup>189</sup>*

The scope of the granted exploration and exploitation area is striking noting that the right is exclusive and effective for a 60-year period. Also, the number of exploitable commodities and resources is unprecedented comparing to current oil field development contracts which substantially cover smaller areas. The tax-free status was another controversial clause of the concession contract granted under Article 7 which stipulates:

*“All lands granted by this arrangement to the concessionaire, or that may be acquired by him in the manner provided in Articles 3 and 4 of these agreements, and also all products exported, shall be free of all custom duties and taxes during the term of concession. All material and apparatuses necessary for the exploration, working and development of the deposits, and for the construction and development of the pipelines, shall enter Persia free of all taxes and Custom House duties.”*

The tax-free status given to the Concession's operations is remarkable, specially considering the amount of taxes that could have been injected into the economy from a technologically massive operation such as the exploitation of a new field. One could note, however, that the Persian Government was to inherit all the equipment and structures build in the course of the operations; but considering the 60-year length of the concession, it would have been unlikely that the equipment could still be used to find viable oil deposits in the exploited area.<sup>190</sup>

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<sup>188</sup> A naturally occurring mineral wax and paraffin.

<sup>189</sup> The full text of the D'Arcy Concession can be found in appendix 1.

<sup>190</sup> Kakhki, M.Hedayati. "A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems." University of Durham, May 2008, p.62

In June 1901, just one month after the original concession was granted, the Shah issued a royal decree to be added to the original concession, “further developing the perception that due to foreign pressure, Persia was giving away its natural resources for free”:

*“Pursuant to the concession granted to Mr. William Knox D’Arcy, as a result of the particularly friendly relation which united powerful Great Britain and Persia, it is accorded and guaranteed to the Engineer William D’Arcy, and to all of his heirs and assigns and friend, full power and unlimited liberty for a period of 60 years, to probe, pierce and drill at their will the depths of Persian soil; in consequence of which, all the subsoil products wrought of him without exception will remain the property of D’Arcy. We declare that all the officials of this blessed Kingdom and our heirs and successors will do their best to help and assist the honourable D’Arcy, who enjoys the favour of our splendid court.”*<sup>191</sup>

The “flattering and ornate” language use in the addendum to the Concession proves the extent of British influence on the process of decision-making in Persia, particularly with regard to granted concessions.<sup>192</sup>

After oil was discovered in 1908, the Anglo-Persian Oil Company (APOC)<sup>193</sup> was established for the development of oil resources. It was a foreign company in which the British Government held 51 percent of the shares.<sup>194</sup> The British Government had a strong influence over the company and made substantial tax revenue from the company’s operation to the extent that it was believed that Britain earned more money from Persian oil than Iran ever did.<sup>195</sup> The British Government also had a strong grip of the company’s management as it had the right to appoint two directors on the managing board who

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<sup>191</sup> Cited in Kakhki, M.Hedayati. "A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems." May 2008, p. 63

<sup>192</sup> *ibid*

<sup>193</sup> The company was later renamed and called Anglo-Iranian Petroleum Company (AIPC).

<sup>194</sup> Zoghi, I. *Masaele Siasi Eghtesadi Nafte Iran (the Political and Economic Aspects of Iranian Oil)*, Tehran: Pazhang, 1381 (2001)

<sup>195</sup> "The Economy- Role of the Government ". United States: U.S. Library of Congress <http://countrystudies.us/iran/63.htm>

would have the power of veto on any issue in relation to British national interest.<sup>196</sup> The British Government's strong involvement in D'Arcy concession was predominantly due to the fact that the development of oilfields in Iran coincided with the decision of the British Admiralty to substitute coal with oil, as the means of fuelling their warships.

The exploitive approach of the British Government and unfair clauses of the concession caused serious political disputes between the Iranian and British Governments. Reza Shah, who deposed the Qajari Shah in 1925, made it clear from the outset that Iran was no longer willing to give away its natural resources practically for free. To curtail the expansion of foreign influence and secure more profits for Iran, he called for renegotiation of the terms of the concession and announced in a public speech that "*no more can Iran tolerate the enormous profits from its oil going into pockets of foreigners while at the same time being dispossessed of its oil wealth.*"<sup>197</sup>

Since then for over two decades, the Iranian Government, being aware of its rights and entitlement to a greater share of its own natural resources, continued expressing its dissatisfaction by urging renegotiation and modification of the terms of the concession contracts.

Negotiations to secure better terms for Iran continued until 1931. During that year, Iran's oil revenue plummeted dramatically and the blame for the fall of the revenue was attributed by the company to a global recession. Reza Shah was dissatisfied with the length of the negotiations and the continuous company excuses and issued an order to his ministers to annul the D'Arcy Concession.<sup>198</sup> The British Government strongly condemned the annulment and filed a complaint in the League of Nations and sent several warships to the Persian Gulf. The Security Council did not issue any resolution on the

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<sup>196</sup> Zoghi, I. *Masaele Siasi Eghtesadi Nafte Iran (the Political and Economic Aspects of Iranian Oil)*, 1381 (2001)

<sup>197</sup> Malek, M. "History of Iran: Oil Nationalisation." Iran Chamber Society

<sup>198</sup> Kakhki, M.Hedayati. "A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems." May 2008, p.67

matter and advised the parties to seek a solution through negotiation, the result of which was the 1933 Concession.

The most important provisions of the new concession were as follows:

*“The Government grants to the company, on the terms of this concession, the exclusive right, within the territory encompassed by the Concession, to look for and extract petroleum as well as to refine or treat in any other way and render suitable for commerce the petroleum obtained through this process.”*<sup>199</sup>

Additionally, permission to conduct various logistical operations has also been granted.

*“...the company is permitted to procure, without special license, all imports necessary for the exclusive needs of its employees, subject to the payment of the Custom duties and other duties and taxes in force at the time of importation...”*<sup>200</sup>

The effect of this contract was an alteration in the business procedure, namely instituting an annual royalty per each ton of petroleum sold, setting a minimum annual payment to the Government and obligating the foreign companies to pay 20 percent of dividends earned from distribution. The agreement also provided Iran with the right to investigate the oil company in certain areas, which was part of an effort to ensure that the previous difficulties with ensuring the fair distribution of profits would not reoccur.

Notwithstanding the new favourable provisions, there were critics that the conditions were by no means fair to domestic interests. Firstly, the company had the right to terminate the concession, whereas such the Iranian Government had no such power; secondly the Government remained uncompensated for the decreasing value of the pound sterling, attributable to the use of official gold prices rather than market gold prices, as used by the Company, in calculations of currency rates; thirdly, payments to the Government were made after British Income Tax had been deducted; and last but not least, the British Government had unjustly limited the share of Iranian distributed

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<sup>199</sup> Alavi, S.A., *History of the Oil Industry in Iran*: California Institute of Asian Studies, 1978, p.58

<sup>200</sup> *ibid*

profits.<sup>201</sup> The sale of petroleum at low prices to the British Navy and British Air Forces was also seen by many as prejudicial, as it lowered the company's distributable profits shared by Iran. Further, the company often dodged custom duties and charges having equivalent effect on several imported commodities. Tax was not levied on the allied forces, amounting to losses for the Iranian Government of up to US\$18 million<sup>202</sup>. The conditions of employment of Iranian workers were poor, and unions were banned. For all these reasons, Iranians held a substantial grudge against the concession, and the company, in particular.<sup>203</sup>

An equally important historical event which added to Iran's petroleum sector sensitivity was the country's occupation by allied forces during the World War II.<sup>204</sup> The War proved the significance of secure access to oil, as the allied air forces operating in the Far East, Europe and Middle East were highly dependent on the Abadan refinery for fuel. Hence, the war brought allied powers to the country to defend the Persian oilfields from a possible German takeover, among other reasons.<sup>205</sup> Following this invasion, Reza Shah, who had connections to Axis interest, abdicated and his son Mohammad Reza Shah took his father's position and adopted a pro-Allies policy.

After World War II, the preceding events, particularly the mounting political competition between global powers to acquire a larger share of Iranian oil resources and the resentment among the Iranians caused by the occupation of their homeland and opposition to the terms of the concession, gradually built up and culminated in the nationalisation of the oil industry in March 1951.<sup>206</sup> This was also coupled with "the disappointing experience of attempting to renegotiate contracts perceived by the domestic

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<sup>201</sup> Kakhki, M.Hedayati. "A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems." May 2008, p71

<sup>202</sup> *ibid* p.72

<sup>203</sup> Makki, H., *Tarikh-E Bist Saleye Iran (Iran's 20-Year History)*, Tehran: Amir Kabir, 1362

<sup>204</sup> Nadimi, F. "The Role of Oil in the Outcome of the Iran-Iraq War" In *The Iran-Iraq War: New International Perspectives*, edited by Nigel Ashton and Brayn Gibson: Routledge, 2013, p. 78

<sup>205</sup> During the World War II, Reza Shah's support of the Nazi regime, aroused concerns among the Allies and as a result, the occupation of Iran was partly due to a preventive policy to deter Germans influence and their potential access to Iran's petroleum resources.

<sup>206</sup> Nadimi, F. "The Role of Oil in the Outcome of the Iran-Iraq War" In *The Iran-Iraq War: New International Perspectives*, 2013, p.78

public and the authorities as being unbalanced, only to be contractually bound as the result of foreign pressure, to further unfair terms.”<sup>207</sup> As a result, a radical transformation occurred in the 1950, changing the landscape of the Iranian oil industry. The 1951 Nationalisation did not occur in a historical vacuum, but instead was a logical progression of outside forces intervening in Iran’s political and economic development.<sup>208</sup> The movement behind the nationalisation of the oil industry was greatly strengthened by Dr. Mohammad Mussadeq, the Iranian popular Prime Minister, who had strongly proclaimed that “*nationalisation of oil would abolish poverty in Iran at one stroke.*”<sup>209</sup> The Government’s initiative to nationalise the oil industry received strong support from the Parliament, passing a proposal to take over all the installations of ‘the late Anglo-Iranian Oil Company’ without compensation immediately. The single-article bill enacted by the Parliament in 1951 stipulates:

*“For the happiness and prosperity of the Iranian nation and for the purpose of securing world peace, it is hereby resolved that the oil industry through all part of the country, without exception, be nationalised, that is to say, all operation of exploration, extraction and exploitation shall be carried out by the Government”*<sup>210</sup>

The first immediate consequence of nationalisation was a worldwide embargo on the purchase of the Iranian oil, the freezing of Iran’s sterling assets and banning export of goods to the country.<sup>211</sup> The company and British Government were of the opinion that nationalisation of the oil industry was unlawful, and appealed to the International Court of Justice, “declaring that it would protect British property and assets in Iran.”<sup>212</sup> The Court issued an order for the protection of both parties’ respective rights, to be taken by

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<sup>207</sup> *ibid*, p. 101

<sup>208</sup> Zoghi, I. *Masaele Siasi Eghtesadi Naft-e Iran (the Political and Economic Aspects of Iranian Oil)*, 1381 (2001)

<sup>209</sup> Cavendish, R., ‘The Iranian Oil Fields Are Nationalised’, *History Today* 51, no. 5 (2001)

<sup>210</sup> Iranian embassy, cited in Kakhki, M.Hedayati. "A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems." May 2008, p. 105

<sup>211</sup> Farmanfarmaian, K., *An Analysis of the Role of the Oil Industry in the Economy of Iran*: University of Colorado, 1955

<sup>212</sup> Kakhki, M.Hedayati. "A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems." May 2008, p.107

interim measures.<sup>213</sup> The Iranian Government refused to accept the Court's jurisdiction, causing Britain to initiate measures compelling Iran to respect the Court's order for interim measures. Mussadeqh represented Iran himself at the Court, arguing that nationalisation of the oil industry, being a purely domestic matter, was out of the Court's jurisdiction, or that of any foreign state. After the hearings, the Court reached the ruling that the Court's jurisdiction was limited to treaties and conventions only, and that the 1933 Agreement was a concessionary contract to which the British Government was not party, and that accordingly, the Court had no jurisdiction to adjudicate on the matter referred to it by the British Government in 1951.<sup>214</sup>

The oil embargo and pending deficits accumulated throughout the earlier years led to an economic crisis, resulting from the loss of foreign exchange and oil revenues. The deteriorating economic conditions triggered a move against the reform-minded Mussadeq Government which drove initiatives to abolish the Parliament and depose the Shah.<sup>215</sup> However, as the British were seeking to undermine Mussadeqh's Government and replace it with one that would be more receptive to their oil interest, the so-called 1953 *coup d'etat* planned by the British MI6 and backed by the U.S. Central Intelligence Agency (*Operation Boot*) caused the fall of the Mussadeq Government and created an international oil consortium in Iran in 1954, where American companies were the leading partners.<sup>216</sup> The nationalisation of the oil industry which was initiated to demonstrate a nation's practice of self-determination led to a situation in which national sovereignty was undermined. The overthrow of the first democratically elected Government has left deep sentiments throughout the country, and significantly changed the way Iranians viewed the western world. Therefore, it can be argued that the current suspicions

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<sup>213</sup> ICJ Order of 5 July 1951 - Anglo-Iranian Oil Co. (United Kingdom v. Iran), 05 July 1951

<sup>214</sup> Kakhki, M.Hedayati. "A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems." May 2008, p.110

<sup>215</sup> Malek, M. "History of Iran: Oil Nationalisation." Iran Chamber Society

<sup>216</sup> Cavendish, R., 'The Iranian Oil Fields Are Nationalised', *History Today* 51, no. 5 (2001)



regarding the outcome of foreign investment in the petroleum industry is “understandable”.<sup>217</sup>

In the 1960s, Iran and the consortium planned to substantially develop Iran’s petroleum sector and to increase oil production to 8 million bbl/d by the late 1970s, and construction of the required infrastructure to reach such a target was well under way. In the early 1970s, Iran began to accumulate capital from oil rent at an accelerated pace and developed an awareness of its own economic potential.<sup>218</sup> In 1973, being aware of shortcomings of the 1954 Agreement in which, according to the Shah, Iran’s long-term interests were not preserved, he gave an ultimatum to the oil consortium that unless a new arrangement was agreed upon, Iran would not extend the Agreement beyond 1979 and that the consortium members would then be treated as ordinary buyers of Iranian oil. The vastly complex and thriving petroleum industry resulting from western companies’ participation had significant influence almost on every aspect of the Iranian economy and society, and any loss or damage to the system would have profound consequences.<sup>219</sup> The capitulation of the Shah to foreign interests sowed the seeds for the Revolution, which “it is almost reasonable to assume could have been avoided had the oil interests of the British Government, who were exercising an almost colonial rule over Iran, not been the first concern of their Foreign Office.”<sup>220</sup>

The Islamic Revolution and the fall of the Shah to a large extent also reinforced the sensitivity of the petroleum sector. The Iranian transformation unleashed an Islamic fundamentalist Revolution that had an immediate and significant impact within the region and the foreign policies of western countries, particularly, the U.S.<sup>221</sup> Following the

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<sup>217</sup> Kakhki, M.Hedayati. "A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems." May 2008, p.114

<sup>218</sup> Ehteshami, A., "The Foreign Policy of Iran." In *The Foreign Policies of Middle East States*, edited by Lynne Rienner: Boulder & Co, 2002, p.286

<sup>219</sup> Nadimi, F. "The Role of Oil in the Outcome of the Iran-Iraq War" In *The Iran-Iraq War: New International Perspectives*, 2013, p.79

<sup>220</sup> Kakhki, M.Hedayati. "A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems." May 2008, p.114

<sup>221</sup> Randall, S.J. *United States Foreign Oil Policy since World War I: For Profits and Security*: McGill-Queen's University Press, 2005, p. 295

Revolution, NIOC annulled all Iranian petroleum contracts concluded with foreign firms before the Revolution, promoting the idea of preserving natural resources for future generations and preventing sales of national wealth at compromised prices to Westerners. As part of this policy, it was decided to lower the oil production rate and cancel gas export contracts. As a result, Iran was subjected to costly and prolonged litigation over the cancellation damages.<sup>222</sup> The U.S. Embassy crisis in Tehran also accelerated the departure of major oil companies from the Iranian oil sector. In order to avoid further interruption in the flow of oil, Iranian officials took over the fields, as they were sufficiently experienced to conduct such operations on their own.

The initiative for independent development of the petroleum resources was hard hit by the start of the Iran-Iraq war in September 1980. Since discovery of huge petroleum resources, the Persian Gulf region has always been considered a strategic location, and superpowers tend to claim it as their sphere of influence and their right to interfere whenever they felt their interests were threatened.<sup>223</sup> Iran, a revolutionary state, rejected this hegemonic attitude and opposed such interference. The country's foreign policy after the Islamic Revolution has been based on rejection of all forms of foreign domination and preservation of the independence of the country from foreign intervention.<sup>224</sup> In the context of the Islamic Republic's guiding principles of maintaining territorial and Muslim integrity and independence, the West in general and the U.S. in particular, have been considered as "enemies of Islam and Iran".<sup>225</sup> Hence, as a measure to combat Iran's anti-western policy, the U.S. indirectly supported the Iraqi Government's war against Iran which heavily targeted Iran's most vital sector, i.e. the hydrocarbon sector.

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<sup>222</sup> Piran, H. Hoghooghe naft va gaz dar davari beynolmelal (Petroleum law in international arbitration); *Etemad*, 10 Ordibehesh 1387

<sup>223</sup> Pelletiere, S.C., *The Iran-Iraq War: Chaos in a Vacuum*: Greenwood Publishing Group, 1992

<sup>224</sup> Ehteshami, A., "The Foreign Policy of Iran." In *The Foreign Policies of Middle East States*, 2002

<sup>225</sup> *ibid*

The entire Iranian economy was highly dependent on export of the crude oil.<sup>226</sup> As a result, Iraqi military planners favoured targeting oil and gas facilities, whether production and processing, refining, transportation, import/export and distribution networks.<sup>227</sup> By the start of the war, oil, petrochemical and gas infrastructure became the target for heavy Iraqi air and ground attacks. The destruction of the important Abadan refinery in 1980 (which produced an average of 628,000 bbl/d of refined oil product), the bombing of refineries and shuttle tankers, and the continued embargo on purchases of Iranian oil by Japan, the U.S., and major European countries contributed to the crisis. The Iraqi initiative of interrupting Iran's oil export supply first took place in February 1984, when Iraq attacked tankers shuttling between Khark and Sirri islands. Within a short period, Iranian production dropped from an average 1.8 million bbl/d to 350,000 bbl/d, representing a drop of roughly one sixth of total OPEC production.<sup>228</sup> Since then, heavy damages to refineries and pipelines, factories, and industrial sites limited oil production to the point where in November 1987, Iranian oil exports were estimated at 1 million bbl/d down from an estimated 1.9 million bbl/d in the previous month.<sup>229</sup>

After the war, Iran was left in a "serious and multifaceted" crisis: negative economic growth, high unemployment, low productivity and underutilisation of capacity as well as shortages of investment capital and high import dependency.<sup>230</sup> In the absence of foreign investment and other immediately available and accessible resources, Iran's economic difficulties reinforced the country's dependence on oil and the need to generate investment capital, technology and industrial expertise from the West.<sup>231</sup> During the post-war reconstruction period, President Rafsanjani took a moderate path and encouraged

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<sup>226</sup> Nadimi, F. "The Role of Oil in the Outcome of the Iran-Iraq War" In *The Iran-Iraq War: New International Perspectives*, 2013

<sup>227</sup> *ibid*

<sup>228</sup> Long, D.E., "Oil and the Iran-Iraq War" In *The Iran-Iraq War: An Historical, Economic and Political Analysis*, edited by M.S. El Azhary: Croom Helm, 1984

<sup>229</sup> "The Economy- Role of the Government." United States: U.S. Library of Congress <http://countrystudies.us/iran/63.htm> .

<sup>230</sup> Amuzegar, J., *Iran's Economy under the Islamic Republic*. London: I.B. Tauris, 1993.

<sup>231</sup> Ehteshami, A., "The Foreign Policy of Iran." In *The Foreign Policies of Middle East States*, 2002

attraction of foreign investment and stronger economic relations with the West. The policy, however, encountered the Clinton Administration's economic sanctions policy, targeting Iran's most vital sector of the economy, namely the oil and gas sector. Being aware of Iran's extensive dependence on oil and gas revenues, the U.S and later in the mid 2000s, European countries tightened their economic pressures on Iran, bringing under sanctions sales of Iranian oil and gas and any investment activities for the development its petroleum sector. Taking advantage of Iran's dependence on its hydrocarbon sector and imposing sanctions with the aim of weakening the country's economy as a political tool has been interpreted as an 'indirect' intervention of western states in the country's interior affairs, reaffirming the sensitivity of the petroleum industry.

### **3.2.2. Politicisation: A Consequence of the Petroleum Sector's Sensitivity**

The direct and indirect foreign interference in the petroleum sector which caused nationalisation, de facto denationalisation, re-nationalisation, revolution and a major war, caused tremendous lack of trust both within the Shah's and post-revolution eras.<sup>232</sup> Before the Revolution, NIOC was established to end the Iranian oil contracts signed with foreign companies, in order to reduce the significance of foreign players in Iran's oil industry.<sup>233</sup> NIOC was only a business-oriented company and did not directly engage in foreign political activities and diplomacy-related policies and decisions.<sup>234</sup> The industry's policies and the politics affecting it were entirely in the hands of the Shah, who personally "handled most major foreign and international issues relating to Iran's oil diplomacy, from decisions in OPEC to relations with foreign companies and Governments."<sup>235</sup> With the overthrow of the Shah and coming into power of an ideologically anti-western, revolutionary regime, the politicisation of the industry intensified dramatically. There

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<sup>232</sup> Naficy, H. "Resource Depletion, Dependence and Development- Country Commentary Iran." Chatham House, 2008

<sup>233</sup> Takin, Manouchehr. "Oil and gas-Can Iran Produce?": Centre for Global Energy Studies.

<sup>234</sup> Barkeshli, F. (June 2012) "Iran's energy diplomacy: Challenges and opportunities," *Middle East Economic Survey*, 3.

<sup>235</sup> *ibid*

were criticisms that the Shah's extensive reliance on foreign powers had led to cheap sales of Iran's national wealth to western companies. Hence during the Revolution, national distribution of the Iranian oil and gas was central to the revolutionary motto based on which Ayatollah Khomeini, the Revolution's leader, promised the nation that, upon success of the Revolution, he "*will bring the oil money to families' dinner tables.*"<sup>236</sup>

Initially started by a direct order of Ayatollah Khomeini cancelling all oil and gas development contracts concluded with foreign companies, the politicisation process extended to establishment of the Ministry of Petroleum which its management team was directly elected by the Government among political figures and was strictly supervised by the Iranian Parliament, Majlis.<sup>237</sup> The Ministry of Petroleum was founded not only to enable Petroleum Minister to attend the OPEC Ministerial Conferences, but also "to establish a routine and more active presence of the hydrocarbon sector in the Cabinet and the country's political scene."<sup>238</sup> Lack of trust resulting from chronic fear of foreign intervention, has caused multiple domestic political interventions in the petroleum industry. As a result, identification of the decision-making body in the Iranian petroleum sector is not easy, as there are many organs claiming the final say over the industry. This includes the President, Ministry of Petroleum, Ministry of Energy, the Parliament, the Expediency Council,<sup>239</sup> the Council of Guardians<sup>240</sup> as well as NIOC, NIGC and last but not least NIGEC.<sup>241</sup>

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<sup>236</sup> Arjomand, Amir Said. *After Khomeini: Iran under His Successors*. Oxford: Oxford University Press, 2009., p.152

<sup>237</sup> The unicameral Iranian Parliament, the Islamic Consultative Assembly or "Majlis-e Shura-ye Eslami", consists of 290 members elected for a 4-year term. The members are elected by direct and secret ballot. It drafts legislation, ratifies international treaties, and approves the country's budget. All legislation from the assembly must be reviewed by the Council of Guardians. Candidates for a seat in the Majles require approval by the Council of Guardians".

<sup>238</sup> Takin, M. "Oil and Gas-Can Iran Produce?" Centre for Global Energy Studies  
<http://igs.nigc.ir/ARTIC/NG-00.PDF>

<sup>239</sup> Created by Ayatollah Khomeini in 1988, the Expediency Council has the authority to mediate disputes between Parliament and the Council of Guardians. According to the constitution, the Expediency Council also serves as an advisory body to the Supreme Leader, making it one of the most powerful governing bodies in the country. The council also examines presidential and Parliamentary candidates to determine their eligibility to run for a seat".

NIOC, as the sole executive body in charge of the development of Iranian petroleum resources, originally designed to be purely commercial, is highly influenced by its major shareholder, namely the Iranian Government through the Ministry of Petroleum, which plays an extensive role in its policy making process.<sup>242</sup> As a result, “decisions tend to be influenced by political wills, and possibly to the detriment of commercial considerations.”<sup>243</sup> The appointment of four petroleum ministers during the Ahmadinejad administration is an example of how political will overrules long-term commercial interests in Iran’s petroleum sector, in addition to causing serious reputational damage to the industry.

Other organs, such as the Parliament and Council of Guardians, also play their own legislative and supervisory roles over petroleum industry. They often exert their influence through opposing the implementation of oil and gas development contracts, or accusing the authorities involved in negotiations of investment contracts of corruption, or refusing to ratify investment bills presented by the Government in the basis of their inconsistency with national interests or the provisions of the Constitution. Additionally, the national petroleum companies’ budgets, once approved by the Ministry of Petroleum, must be approved by the Ministry of Planning and the Parliament; and once the Parliament gets involved, the Council of Guardians also intervene as it has the right to question the budget -- as a legislation of the Parliament -- and to check whether it is consistent with the Constitution and Shari’a law.

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<sup>240</sup> Twelve jurists comprise the Council of Guardians, six of whom are appointed by the Supreme Leader. The head of the judiciary recommends the remaining six, which are officially appointed by the Parliament. The Council of Guardians is vested with the authority to interpret the Constitution and determines if the laws passed by the Parliament are compatible with Shari’a (Islamic law). Hence the council can exercise veto power over Parliament. If a law passed by the Parliament is deemed incompatible with the Constitution or Shari’a, it is referred back to the Parliament for revision”.

<sup>241</sup> Naficy, H. "Resource Depletion, Dependence and Development- Country Commentary Iran.", 2008

<sup>242</sup> Marcel, V., *Oil Titans: National Oil Companies in the Middle East*: Brookings Institution Press, 2006

<sup>243</sup> *ibid*

In the policy implementation stage, the same problem of parallel exertion of power has caused confusion over the executive body in the oil and gas industry.<sup>244</sup> The Ministry of Petroleum which, for instance, should be the policy maker of the hydrocarbon sector, is still “involved with the day-to-day running of this sector, making it commercially ineffective and highly political.”<sup>245</sup> The Ministry has also failed to prepare and adopt a coherent long-term strategic vision and action plan for its energy sector and its natural gas sector in particular.

There are also three national companies, i.e. NIOC, NIGC and NIGEC each handling extensive overlapping responsibilities. While NIOC is in charge of all oil and gas resources exploration, exploitation and development activities (upstream), NIGC is responsible for domestic transmission, distribution and sales of natural gas (downstream). The situation became even more complex when in 2003 NIGEC was established to handle natural gas export projects (see Section 2.4). The confusion mostly arises when stakeholders are required to deal with responsibilities that are spread throughout different companies. This is particularly challenging in gas export projects where NIGEC is responsible for provision of research, studies and planning, NIOC’s International Affairs Division is in charge of negotiations and NIGC is responsible for downstream operational and technical activities.<sup>246</sup> Dealing with this triangular structure, IOCs often complained about confusion over which body they should approach for different stages of development projects. Furthermore, as mentioned in Chapter 2, in July 2012, NIOC dissolved NIGEC as one of its subsidiaries, not surprisingly, for political reasons.<sup>247</sup> There were reportedly concerns among the NIOC officials over a prospective amalgamation of NIGC and NIGEC which were suspected might reduce NIOC’s power

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<sup>244</sup> *Iran Economics*, “Petroleum sector's politicisation not compatible with the 20-year development plan (siasi-zadegi dar san'ate naft va gas motabegh ba barnameye tose'eye 20 saleh nist), <http://www.iraneconomics.net/fa/articles.asp?id=2854>

<sup>245</sup> Ghorban, N. "The Need to Restructure Iran's Petroleum Industry (Revisited after Eight Years)", *Middle East Economic Survey* XXVIII, (2005): 6

<sup>246</sup> Kassaizadeh, S.R. "NIGC: The Pioneer of the Country's Energy Sector ( Sherkat-E Melli Gaz Parcham Dar-E Energy Dar Keshvar)." *Chashmandaz* 31, (2006)

<sup>247</sup> *Ebtekar News*, “Sherkat Saderate Gas Iran Monhal Shod (National Iranian Gas Export Company Is Nullified)." 15 July 2012

and influence over the natural gas sector. Hence, in a pre-emptive strike, NIOC announced the dissolution of NIGEC, a decision which reaffirmed the influence of political considerations rather than commercial matters in decision-making processes in the Iranian petroleum industry.<sup>248</sup>

The anti-western dominance policy has also been reflected in the Iranian revolutionary Constitution, prohibiting any foreign entities' (individual or companies) participation in the oil and gas sector.<sup>249</sup> A few years after the Iran-Iraq war when the country was extensively in need of capital for the reconstruction and development of its petroleum sector, the Parliament approved opening of Iran's industry to foreign investment, using the buyback formula. Despite taking a more moderate stance towards foreign participation in the petroleum industry, fears of outside intervention manifested in adopting the buy-back contractual regime which according to some commentators maintained the country's harsh attitude towards foreign investors.

The Iranian negotiating behaviour has also been highly affected by the fear of being exploited or deceived by foreign partners or concerns over being accused of compromising national interests.<sup>250</sup> Some international executives that have negotiated with Iran say that Iran insists on deals that leave little profit and that the country frequently seeks to renegotiate provisions of a contract after it is ratified.<sup>251</sup> Some sources even believe the impact of domestic political factors on the industry is as destructive as international sanctions. The U.S. administrations have reportedly claimed that even without actually imposing sanctions on Iran, the mere threat of imposing sanctions coupled with "Iran's reputedly difficult negotiating behaviour have combined to slow the development of Iran's energy sector."<sup>252</sup>

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<sup>248</sup> *ibid*

<sup>249</sup> Article 153 of the Constitution, The 1979 Constitution of Islamic Republic of Iran

<sup>250</sup> Limbert, J.W., *Negotiating with Iran: Wrestling the Ghosts of History*: United States Institute of Peace Press, 2009

<sup>251</sup> Katzman, K. "Iran Sanctions." Congressional Research Service, June 2011

<sup>252</sup> *ibid*



The politicised mind-set over development of the petroleum sector has also affected the management structure of the industry. After the Revolution, almost the entire cadre of senior and mid-level management of the industry were either “expelled, forced into exile or were given early retirement” for the fear of their ideological attachment to the monarchy regime and consequently being potential interested to have interactions with western countries.<sup>253</sup> The new appointees have been mostly chosen on the basis of political considerations; in other words, Islamic and revolutionary credentials were given greater priority over technical competence and work experience.<sup>254</sup> As a result, any fundamental changes in the management of the industry would face fierce resistance both from within the industry and more generally from the various political bodies.

Constant intervention from different segments of power and attempts to accommodate their different views on the petroleum industry has also prevented the country from designing and implementing a comprehensive energy resource development plan which is undoubtedly necessary for a country like Iran with huge energy resources.<sup>255</sup> The disagreement between politicians is particularly intense in the natural gas sector where there have been prolonged debates over giving priority to gas export projects, or its allocation to domestic markets.<sup>256</sup> While during Khatami’s presidency (1997-2005), gas export projects were pursued more actively, during the Ahmadinejad administration there was explicit reluctance to allow such projects to proceed. Not surprisingly, frequently changing policies towards the natural gas sector have, for example, resulted in the notoriously unstable gas export contract with Turkey which not only led to numerous rows over the price and delivery but also reputational damages (see Section 2.9.1.1). Unstable policies also affected secure and sufficient supply of gas to the domestic market

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<sup>253</sup> Naficy, H. "Resource Depletion, Dependence and Development- Country Commentary Iran." Chatham House, 2008

<sup>254</sup> *ibid*

<sup>255</sup> Ghorban, N. "The Need to Restructure Iran's Petroleum Industry (Revisited after Eight Years)", *Middle East Economic Survey* XXVIII, (2005): 6

<sup>256</sup> Ebrahimi, I., *Iran's Gas Export: Opportunities and Threats (Saderat-E Gaz-E Iran: Forsat-Ha Va Tahdid-Ha)*., Edited by Mostafa Azari: Research Institute of Tadbir-e Eshtesad, 1386 (2006)

particularly for oilfield re-injection, negatively impacting the country's oil production and revenue (see Section 6.3.2).

Politicisation has also restricted the flow of information between the industry and Government's planning authorities on one hand and research and academic institutions on the other.<sup>257</sup> The tendency to consider all information about the oil and gas industry as secret, stems from the same political concerns over foreign dominance when the real oil data were kept away from producing countries during the concession period.<sup>258</sup> Treating the industry's information and contracts as extremely confidential has created a growing institutional corruption, a good example of which is the controversial Crescent gas deal which, in addition to disputes over the pricing mechanism and political conflicts between Iran and the UAE, failed as a result of severe opposition from members of the Parliament, accusing the Government's authorities of taking bribes for conclusion of the export deal. Another startling case of corruption allegations at the exploration-production award phase involved the Norwegian national oil company, Statoil, which is said to have paid "substantial consultancy fee" to Iranian officials to assist Statoil in obtaining contracts to develop phase 3 of the South Pars and open doors for additional projects in the Iranian oil and gas exploration industry.<sup>259</sup> Additionally, international sanctions and active presence of public commercial entities which have been fully supported by the regime, particularly during the Ahmadinejad administration, have substantially intensified institutional corruption as there were justifications for suppression of any public inquiry and investigation, in the light of country's critical economic and political conditions. Limited channels of trade as a result of international sanctions have also assisted Iranian political hardliners to attain a tighter grip on Iran's economy. The sanctions and resulting economic difficulties have helped politicians to use sanctions as an excuse for domestic economic mismanagement. More effectively, this has brought about justifications for

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<sup>257</sup> Ghorban, N. "The Need to Restructure Iran's Petroleum Industry (Revisited after Eight Years)", *Middle East Economic Survey* XXVIII, (2005): 6

<sup>258</sup> *ibid*

<sup>259</sup> *Global Security*, "Corruption." <http://www.globalsecurity.org/military/world/iran/corruption.htm>, 2009

extensive involvement of public and Governmental institutions in the country's trade and economic activities, and expulsion of the private sector from major development projects. Without any supervisory body to monitor the activities of these giant public commercial-military entities, most notably the commercial arm of the revolutionary guard, Khatam-al-Anbiya Base, and in the light of wide-spread administrative corruption, little room has remained for establishment and growth of private enterprise.<sup>260</sup>

### **3.3. International Sanctions against Iran**

Since the mid 1990s, the Iranian petroleum industry has been subject to extensive unilateral, multilateral and international sanctions. Initiated by the U.S. Government in 1996, sanctions were broadened later on both in terms of their coverage and international support, aiming at forcing the Iranian Government to change its allegedly hostile foreign policies and halt the development of its nuclear program.

#### **3.3.1. The United States' Unilateral Sanctions**

In the decades since the 1979 Islamic Revolution, the U.S. has tried to isolate Iran diplomatically, militarily and economically, relying on wide-ranging unilateral sanctions. After the overthrow of the Shah, U.S.- Iranian relations deteriorated sharply following the 1979-80 Tehran hostage crisis in which 52 U.S. diplomats were held hostage for 444 days by a group of Islamist students.<sup>261</sup> To punish Tehran and to force it to change its hostile policies, President Carter administration imposed the first series of economic sanctions against the country.<sup>262</sup> Even after the hostage crisis, the U.S. Government did not hesitate to deploy the same punitive measures against Iran "to alter what it regarded as the unacceptable political and military behaviour of Iran."<sup>263</sup>

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<sup>260</sup> Kakhki, M.Hedayati. "A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems." May 2008

<sup>261</sup> Torbat, A.E. "Impacts of the US Trade and Financial Sanctions on Iran." *The World Economy* 28, no. 3 (March 2005): 407-34

<sup>262</sup> Sabatini, R. "Economic Sanctions: Pressuring Iran's Nuclear Program." Monterey Institute for International Studies, Nuclear Threat Initiative, June 24, 2010

<sup>263</sup> Alikhani, H., *Sanctioning Iran: Anatomy of a Failed Policy*. London: I.B.Tauris & Co Ltd, 2000

Since its inception as an anti-hegemonic regime, the Iranian Government has persistently challenged US foreign policies in the Middle East region. For the U.S. Government maintaining its domination in the Persian Gulf region has been of strategic importance due to the region's massive oil and gas resources. Hence, sanctions have been predominantly deployed by the U.S. Government as a means to promote its foreign policy objectives. During the Reagan administration, sanctions continued to blacklist Iran from receiving arms under the U.S. Arms Export Control Act<sup>264</sup> and to prohibit imports of Iranian crude oil and all other Iranian imports to U.S. markets.<sup>265</sup> U.S. unilateral sanctions were further expanded by the Clinton administration where two Executive Orders banned all U.S. firms' participation in the development of the Iranian petroleum sector, and broadened the scope of sanctions to encompass a total trade and investment embargo on the country.<sup>266</sup> Sanctions, however, did not prevent European and Asian companies from filling the gap left by U.S. companies in the petroleum sector. The resulting 'loop hole' which notably undermined the effectiveness of the U.S. unilateral sanctions, caused the U.S. Congress to expand the coverage of sanctions to include foreign companies investing in Iran's energy sector.<sup>267</sup> The forthcoming section reviews major and most effective U.S. sanctions against Iran.

### **3.3.1.1. The Iran Sanctions Act (ISA)**

When Iran opened its petroleum sector to foreign investment in 1995, the Iran Sanctions Act (ISA) was introduced by the U.S. Government as the core of its sanctions, targeting and threatening foreign firms investing in Iran's energy sector.<sup>268</sup> ISA followed an earlier

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<sup>264</sup>The Arms Export Control Act, US Department of State. [http://www.pmddtc.state.gov/regulations\\_laws/aeca.html](http://www.pmddtc.state.gov/regulations_laws/aeca.html)

<sup>265</sup> Executive Order 12613-Prohibiting imports from Iran, The National Archives, available at: <http://www.archives.gov/federal-register/codification/executive-order/12613.html>

<sup>266</sup>"Executive Order 12613--Prohibiting imports from Iran, .", In. The National Archives <http://www.archives.gov/federal-register/codification/executive-order/12613.html>

<sup>267</sup>Iran and Libya Sanctions Act of 1996, from the congressional record. [http://www.fas.org/irp/congress/1996\\_cr/h960618b.htm](http://www.fas.org/irp/congress/1996_cr/h960618b.htm)

<sup>268</sup> Originally called the Iran-Libya Sanctions Act (ILSA), the Act was also inclusive of Libya which had been refusing to surrender for trial the two intelligence agents suspected in bombing of Pan Am. Libya was removed from the Act in 2004 when the country fulfilled the requirements of

March 1995 Executive Order, barring U.S. companies' investment in the Iranian energy industry. The Act originated from 'Iran Foreign Oil Sanctions Act', proposed by Senator Alfonse D'Amato in 1995 to sanction foreign firms' export to Iran of energy *technology*.<sup>269</sup> A revised version instead passed the Senate in December 1995 sanctioning *investment* in Iran's energy sector.<sup>270</sup> Being aware of Iran's needs for attracting substantial foreign investments for the development of its old oilfields and the already under-developed natural gas sector, the Act was designed to prohibit foreign entities (companies and individuals) from investing more than US\$20 million in one year in Iran's energy sector. The non-compliance of the legislations entailed drastic financial penalties for violating companies.<sup>271</sup> The definition of 'investment' in ISA includes not only equity and royalty arrangement, but also any contract that includes responsibility for the development of the Iranian petroleum sector.<sup>272</sup>

In the late 1990s, ISA was heavily criticised for its 'extra-territorial' characteristics, authorising U.S. penalties against foreign firms incorporated outside U.S. territory.<sup>273</sup> The EU, for example, opposed ISA when it was first enacted and threatened to file a formal complaint against the U.S. Government before the World Trade Organisation (WTO). However, in April 1997, the U.S. and EU agreed to avoid a trade confrontation over ISA,

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all U.N resolutions on Pan Am. Since then the Act is called Iran Sanctions Act (ISA). Katzman, K. "The Iran-Libya Sanctions Act." In *CRC Report for Congress, 2005*, In *CRC Report for Congress* <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA475663>.

<sup>269</sup> "Iran Sanctions." Congressional Research Service, July 2012.

<sup>270</sup> *ibid*

<sup>271</sup> Once a company is identified as a violator, ISA requires the imposition of *two* of a menu of six of the following available sanctions on that firm:

- (1) denial of Export-Import Bank loans, credits, or credit guarantees for U.S. exports to the sanctioned entity;
- (2) denial of licenses for the U.S. export of military or militarily useful technology;
- (3) denial of U.S. bank loans exceeding US\$10 million in one year;
- (4) if the entity is a financial institution, a prohibition on its service as a primary dealer in U.S. government bonds; and/or a prohibition on its serving as a repository for the U.S. government funds (each counts as one sanction);
- (5) prohibition on U.S. government procurement from the entity; and
- (6) restriction on imports from the entity, in accordance with the International Emergency Economic Powers Act (IEEPA, 50 U.S.C. 1701).

"Iran-Libya Sanctions Act of 1996," In: the congressional record. [http://www.fas.org/irp/congress/1996\\_cr/h960618b.htm](http://www.fas.org/irp/congress/1996_cr/h960618b.htm)

<sup>272</sup> Katzman, K. "Iran Sanctions." Congressional Research Service, June 2011

<sup>273</sup> Alexander, R.G., 'Iran and Libya Sanctions Act of 1996: Congress Exceeds Its Jurisdiction to Prescribe Law', *Washington and Lee Law Review* 54, no. 1601 (1997): 34

with the EU committing not to file any complaint with the WTO and the Clinton administration waiving sanctions on the first project which was determined to be in violation of the Act's provisions, namely Total SA, Gazprom and Petronas consortium to develop phases 2 and 3 of the South Pars gas field.

In the early 2000s and during the George W. Bush administration, sanctions were eased mostly as a result of the U.S. policy to support the reformist Government of Mohammad Khatami, a moderate cleric, who had promised to implement political and economic reforms in Iran.<sup>274</sup> Foreign policy under Khatami was mainly focused on reintegrating Iran into the international system and enhancing the country's global economic position through the expansion of trade and diplomatic dialogue.<sup>275</sup> Khatami succeeded in improving relations with the EU, while benefiting from the US-EU compromise on the U.S. extraterritorial sanctions and growing opposition in the U.S. oil industry. Within its limits, the Khatami administration promoted foreign investment and economic reform as a solution to further economic development.

However coming to power of President Ahmadinejad had dramatic political and economic implications for Iran. His foreign policy has been based on finding and creating external threats, which have helped him rally support.<sup>276</sup> Fiery rhetoric and the development of the nuclear program helped to increase the dependency of Iranian society on the state due to the greater isolation and the tightening sanctions against Iran, which in turn reinforced the Government's position. As Duero argues, Ahmadinejad "actively pursued a hardline, conservative foreign policy in order to increase Iran's international isolation as well as to raw threats from the U.S. and Israel to unify the domestic population against a common cause and deflect their attention away from internal economic and social problems. If the rising global demand for oil and gas and the increasingly confrontational Iranian nuclear issue is an indication, the theocratic regime

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<sup>274</sup> Torbat, A.E. "Impacts of the US Trade and Financial Sanctions on Iran." March 2005

<sup>275</sup> Rakel, P. *The Iranian Political Elite, State and Society Relations and Foreign Relations since the Islamic Revolution*, Duke University Press, 2008

<sup>276</sup> *ibid*

in Tehran for the conceivable future can only be strengthened in light of the international community's short-sighted policy of isolation and containment."<sup>277</sup> Thus, the more Ahmadinejad administration, through its foreign policy deteriorates the country's relations with the international community, the more it can gain control over the petroleum sector and have access to the rentier system. As such, and with the support of the Revolutionary Guard and the parallel structures and security apparatus, Ahmadinejad had the "necessary capacity to suppress internal unrest or to appease the masses."<sup>278</sup> Not surprisingly, his foreign policy created mounting international pressure on the country, leading to the imposition of further stringent sanctions on the country.

### **3.3.1.2. The Comprehensive Iran Sanctions Accountability and Divestment Act (CISADA)**

Ahmadinejad's hostile foreign policy and further progress in the development of nuclear capabilities made the Obama administration and the U.S. Congress increase the scope of U.S. unilateral sanctions. Administered by the U.S. Treasury's Office of Foreign Assets Control (OFAC), the Congress passed the Comprehensive Iran Sanctions Accountability and Divestment Act (CISADA) in 2010, expanding the authorities of ISA to deter sales by foreign companies of gasoline to Iran. It also makes sanctionable:

- sales to Iran of over US\$1 million worth (or US\$5 million in a one year period) of gasoline and related aviation and other fuels and;
- sales to Iran of equipments or services (same dollar threshold as above) which would help Iran produce or import gasoline (including sales of equipment and services that Iran can use to construct or maintain its oil refineries).<sup>279</sup>

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<sup>277</sup> Duero., *The Iranian Rentier State: Rentierism, Political and Economic Development in Iran*: VDM Verlag, 2009

<sup>278</sup> *ibid*

<sup>279</sup> Comprehensive Iran Sanctions, Accountability, and Divestment Act of 2010. [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111\\_cong\\_reports&docid=f:hr512.111.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_reports&docid=f:hr512.111.pdf)

CISADA also amends the definition of investment in ISA to include pipelines to or through Iran and contracts to construct, upgrade, or expansion of energy projects.<sup>280</sup> The Act also stipulates that sanctions' provisions are applicable from the beginning of pipeline construction, and not from the start of oil or gas flow through a finished project.<sup>281</sup> Furthermore, it eliminates exemptions from sanctions the sales of energy related equipments as it has structured such sales to be "investments or on-going profit-earning ventures rather than simple sales transitions."<sup>282</sup>

### **3.3.1.3. The Executive Order 13590**

In November 2011, following a report from the International Atomic Energy Agency (IAEA) indicating that Iran might have worked on nuclear explosive technology, the U.S. Government issued the Executive Order 13590 which expanded the authorities of ISA to impose at least one of the available ISA sanctions on foreign firms that:

- provide to Iran US\$1 million or more (or US\$5 million in a one year period) worth of goods or services that Iran could use to maintain or enhance its oil and gas sector;<sup>283</sup>
- provide to Iran US\$250,000 (or US\$1 million in a one year period) worth of goods or services that Iran could use to maintain or expand its production of petrochemical products.<sup>284</sup>

To increase the pressure on Iran, the U.S. Department of the Treasury further strengthened sanctions regulations in February 2012 and expanded their provisions to "foreign financial institutions that knowingly conduct or facilitate certain significant

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<sup>280</sup> *ibid*

<sup>281</sup> Secretary of State Clinton in March 2012 in discussing an Iran-Pakistan pipeline: <http://dawn.com/2012/03/01/tough-us-warning-on-iran-gas-pipeline/>

<sup>282</sup> Katzman, K. "Iran Sanctions." Congressional Research Service, June 2011

<sup>283</sup> This would appear to make sanctionable the activity of global oil services firms in Iran, or the provision to Iran of gear typically used in the oil industry such as drills, pumps, vacuums, oil rigs, and the like. Katzman, K. "Iran Sanctions." Congressional Research Service, June 2011

<sup>284</sup> "Executive Order 13590 Iran Sanctions," In.: <http://www.whitehouse.gov/the-press-office/2011/11/21/executive-order-13590-iran-sanctions>



financial transactions with the Central Bank of Iran (CBI) or a U.S.-designated Iranian financial institution.”<sup>285</sup>

### **3.3.2. The United Nations Sanctions**

Iran’s failure to cooperate with the international community over its nuclear programme made the IAEA refer its case to the United Nations Security Council (UNSC) in 2006. Since then, the UN has passed seven resolutions on Iran, four of which have imposed sanctions.<sup>286</sup> The UN sanctions on Iran do not place restrictions on the country’s energy industry but mostly focus on prohibition of provision of sensitive and dual purpose technologies which can possibly be utilised in its nuclear activities.

The first round of the UN sanctions imposed in 2006 included freezing the financial assets and other economic resources of individual and entities designated by the UNSC as having ties with Iran’s nuclear programme.<sup>287</sup> In March 2007, the UNSC passed more sanctions banning arms export from Iran, restraining member states from sales to Iran of certain categories of heavy conventional arms and expanding the list of individual and entities subject to asset freeze requirements.<sup>288</sup> The third round of the UN sanctions came into force in 2008 strengthening travel and financial restrictions on designated Iranian individual and companies. To further add to the pressures against Iran, the last round of UN sanctions was implemented in 2010 imposing a complete arms embargo on Iran, banning the country from any activities related to ballistic missiles and targeting the assets of the Iranian Revolutionary Guard and the Islamic Republic of Iran Shipping Lines.<sup>289</sup>

Applicability of UN decisions to all its member states has made these so-called ‘international sanctions’, as opposed to U.S. unilateral sanctions legally less controversial

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<sup>285</sup> "Implementation of National Defense Authorization Act Sanctions on Iran," In. (June 2012): U.S. Department of the Treasury <http://www.treasury.gov/press-center/press-releases/Pages/tg1409.aspx>

<sup>286</sup> Security Council Resolutions 1737, 1747, 1803 and 1929, <http://www.un.org>

<sup>287</sup> The UN Resolution 1737 U.N. Doc. S/RES/1737

<sup>288</sup> The UN Resolution 1747, U.N. Doc. S/RES/1747

<sup>289</sup> The UN Resolution 1929, U.N. Doc. S/RES/1929

and practically more effective.<sup>290</sup> In other words, UN sanctions brought about a consensus among the international community over potential security threats from Iran's nuclear programme. The UN member states' commitments to comply with the Security Council's resolutions were unified to undertake concrete measures in confining Iran's access to any resources, indirectly including revenues gained from the sale of its oil and gas resources to hinder the country's ability to fund its acquisition of prohibited items and terrorism-related activities. Thus, UN sanctions have indirectly enhanced the international acceptance and credibility of U.S. sanctions and provided leverage to increase pressures on Iran.<sup>291</sup>

### **3.3.3. The European Union Sanctions**

Being concerned about the implications of Iran's nuclear ambitions, the EU took the first steps in July 2010 to impose sanctions on Iran, which exceeded those mandated under the Security Council resolutions.<sup>292</sup> EU sanctions include a comprehensive package of restrictive measures in areas of trade, financial services, energy, transport as well as additional designations for visa ban and asset freeze.<sup>293</sup> The EU, however, made it clear that these sanctions did not then prohibit importation of Iranian oil and gas, nor did they ban exports of gasoline to Iran.<sup>294</sup>

However, a year and a half later, in December 2011, following the failure in nuclear negotiations with Iran, and the orchestrated attack to the British Embassy in Tehran in

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<sup>290</sup> Article 25 of the UN Charter stipulates that "the Members of the United Nations agree to accept and carry out the decisions of the Security Council in accordance with the present Charter". Also Part 1 of Article 43 emphasises the obligation of the member states to make available to the Security Council on its call any assistance it may need for the purpose of maintaining international peace and security. Charter of the United Nations, 1945

<sup>291</sup> Katzman, K. "Iran Sanctions." Congressional Research Service, April 2010

<sup>292</sup> "Council of the European Union," In. (26 July 2010): [http://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/EN/foraff/115976.pdf](http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/EN/foraff/115976.pdf).

<sup>293</sup> "The Iran (European Union Financial Sanctions) Regulations" In. (2010): The National Archives [www.legislation.gov.uk](http://www.legislation.gov.uk).

<sup>294</sup> The policy was in line with the EU's effort to diversify its gas supply options and minimise its dependence on Russian gas imports. Katzman, K. "Iran Sanctions." Congressional Research Service, June 2011

November of the same year, the EU announced tighter sanctions on Iran.<sup>295</sup> An initiative led by France and Britain, the EU embargo prohibits the purchase, transport, and import of the Iranian crude oil, the export of major equipments and technologies used by the oil sector, as well as related financial deals including banning insurance for shipping oil and petrochemicals from Iran.<sup>296</sup> To minimise the impact on those European countries with most reliance on Iran's crude oil, the EU allowed the contracts which already existed to continue until 1<sup>st</sup> of July 2012 as there were concerns over the impact of sanctions on oil prices and the economic crisis in some European countries.<sup>297</sup> Additionally, the new EU round of sanctions covers freezing the assets of the Iran's Central Bank in Europe, and bans the trade of gold and other materials between European states and the Iranian Central Bank, causing dramatic volatility in Iran's foreign exchange market.<sup>298</sup> In October 2012, EU member states approved one of the toughest sets of sanctions yet on Iran, banning import of Iranian natural gas into Europe and prohibiting financial transactions between the European and Iranian Banks. These sanctions are reportedly direct response to Iran's continued refusal to take effective steps to address international community's concerns over its nuclear programme.

### 3.4. The Impact of Sanctions on Iran

The exact impact of sanctions on Iran's economy is neither clear nor being ever thoroughly assessed by any U.S. or international organisations;<sup>299</sup> hence, it is very difficult to draw a clear line over their actual impact on different segments of Iran's

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<sup>295</sup> "Iran protestors attack UK embassy in Tehran." (29 November 2011) *the Guardian* <http://www.guardian.co.uk/world/blog/2011/nov/29/iran-protesters-attack-uk-embassy-tehran-live>

<sup>296</sup> Saudi Arabia's commitment to fill any supply gap in the oil market gave the required reassurance to the European states to proceed with placing embargo on Iranian crude oil. Chazan, G. (14 March 2012) "Sanctions choke off Iran oil output," *Financial Times* <http://www.ft.com/cms/s/0/50079b60-6df7-11e1-b98d-00144feab49a.html#axzz24xCOM0fY>

<sup>297</sup> The Iran (European Union Financial Sanctions) Regulations" In. (2010): The National Archives [www.legislation.gov.uk](http://www.legislation.gov.uk).

<sup>298</sup> In March 2012, the Belgium-based SWIFT organisation also ended its transactions with the Iranian banks blacklisted by the EU further adding to sanctions' pressure on Iran. Blenkinsop, P., & Younglai, R. "Banking's SWIFT says ready to block Iran transactions," *Reuters*, <http://www.reuters.com/article/2012/02/17/us-iran-sanctions-swift-idUSTRE81G26820120217>, 17 February 2012

<sup>299</sup> Katzman, K. "Iran Sanctions." Congressional Research Service, July 2012

economy. But it is clear that sanctions have slowed down the development of Iran's oil and gas resources and the maintenance of, or increase in, its production and export capacity.<sup>300</sup>

The overall effects of sanctions on Iran vary depending on the timing of their imposition. In the period between 1995 and 2007 when sanctions were imposed unilaterally by the U.S., their impact remained manageable as there were always alternatives for the Iranian Government to take recourse to for development of its economy. Iran's global trade ties and leading role in energy production made it difficult for the U.S. to isolate Iran. This period also coincided with rising oil prices which provided the Government with immense exchange revenue, minimising to a large extent the adverse impact of sanctions.

It was in the second period, namely from 2007 onwards, that sanctions began to bite when the international efforts triggered by the UN and EU sanctions intensified international trade and investment restrictions on Iran.<sup>301</sup>

### **3.4.1. Overall Economic Effects**

The first immediate impact of sanctions was that they curtailed Iran's access to international financial institutions and state-of-art technologies which were badly needed for development of oil and gas resources. A chronic impact of sanctions since their inception was the effect it placed on the country's oil production capacity. Lack of adequate investment and modern technologies delayed or made impossible the maintenance of oil production, though these effects were to some extent offset by higher oil prices and discovery of new reserves. Rising oil prices since 2006 gave Iran enormous economic and political leverage and cushioned the extent to which its economy has been

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<sup>300</sup> Coredesman, A, et.al., 'U.S. And Iranian Strategic Competition: The Sanctions Game: Energy, Arms Control, and Regime Change', Centre for Strategic and International Studies (CSIS), March 2012

<sup>301</sup> Iran's alleged support of groups designated by the U.S. as terrorist organisations and human rights abuses in the aftermath of Iran's 2009 controversial presidential election are also counted as additional reasons for multilateral sanctions against Iran: Slavin, Barbara. "Iran Sanctions: Preferable to War but No Silver Bullet." In *Iran Task Force*: Atlantic Council June 2011

affected by international sanctions.<sup>302</sup> But increasing concerns over the reduction of the country's oil production capacity remained. In 2008, a report published by the Parliament Research Centre showed that Iran's oil production capacity has been experiencing an annual decline rate of 6-8 percent which within a 10-year prospect could dramatically reduce country's production and export capacity with a drastic impact on its oil revenue.<sup>303</sup>

In the international trade domain, sanctions made Iran strategically change its trading patterns and re-align them to available partners with whom it could sustain its trade and investment relations. In the period between 1995 and 2007, when Iran actively negotiated and concluded major investment deals with European and Asian partners, losses incurred by the Iranian economy as a result of sanctions were mostly manifested in higher prices that the country was forced to pay for the involvement of foreign investors in country's major projects. Limited access to the international banking, shipping, and insurance systems added to operational and investment costs in Iran. Had sanctions not been in place, Iran would have been able to attract investments with greater success and security and more importantly, on better terms.<sup>304</sup>

Unprecedented sanctions imposed in late 2011 and early 2012, led by the EU and followed by the U.S., targeted key sectors of the Iranian economy, i.e. Iran's oil sales and Central Bank transactions, had a substantial impact on inflation rates and the stability of the foreign exchange market.<sup>305</sup>

Contradictory reports have been released as to the actual rate of inflation since the imposition of the new round of sanctions. Based on monthly reports from the Central

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<sup>302</sup> Barkeshli, F., 'Iran's Energy Diplomacy: Challenges and Opportunities', *Middle East Economic Survey* 3, no. 6 (June 2012)

<sup>303</sup> 'Baresi Oft Tolide Makhazene Naftie Keshvar Va Manafe Melli (Analysis of Depletion Rate of Oil Fields' Production and Country's National Interest)' *Majlis Research Centre*, 2009

<sup>304</sup> Kakhki, M.Hedayati. "A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems." May 2008

<sup>305</sup> As a result of the imposition of the new sanctions, Iran's oil production has dropped from 3.706 bbl/d in 2010 to 2.817 bbl/d in July 2012, reducing its export capacity from 1.9 million b/d to 900 thousand b/d. "Growing Impact of Emerging Economies on the Oil Market." In *Monthly Oil Market Report*: OPEC, August 2012

Bank of Iran, in the period between April and December 2011, the inflation rate fluctuated between 20 percent and 22 percent. But, in January 2012, immediately after imposition of the new round international sanctions, the growing rate of inflation accelerated, reaching 23.9 percent in April 2012.<sup>306</sup> Restraining from releasing data on inflation in May and June 2012, the Central Bank announced inflation rates of 22.9 percent and 23.5 percent in July and August 2012, respectively.<sup>307</sup> This researcher's field studies, however, showed an average inflation rate of 63 percent,<sup>308</sup> almost compatible with the result of a report released by the Research Centre of the Parliament predicting an inflation rate of 60 percent.<sup>309</sup> A major concern over the rising inflation rate is its impact on deteriorating the value of the national currency reducing the ability of the population to cope with rising prices of staple commodities.<sup>310</sup>

The inflation rate has also been affected by the subsidies reform plan (see Section 5.4). The national cash payments as a compensatory measure, and the rise in energy prices escalated the market liquidity and rising production costs which consequently affected the unemployment rate and nation's purchasing power, causing widespread economic insecurity. Interestingly, the implementation of the long-desired subsidies reform programme was partly encouraged as a result of sanctions, as they have had a "silver lining" in determining the Government to launch the plan.<sup>311</sup> Hoping that the subsidies reform would counteract the impact of sanctions, President Ahmadinejad managed to

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<sup>306</sup> Central Bank of Iran, April 2012

<sup>307</sup> Central Bank of Iran, July & August 2012

<sup>308</sup> The field study was conducted in Tehran for a two-month period between May to June 2012. Average price increase for some staple foods, comparing to the same period in the last years, was 52 percent increase for meat, 65 percent for chicken, 81 percent for dairy products, 83 percent for vegetables and 67 percent for eggs.

<sup>309</sup> *Iranian Students' News Agency (ISNA)*, "movafeghan va mokhalefan-e hadafmandi (Proponents and Opponents to Targeted Subsidies Act)." 7 May 2012

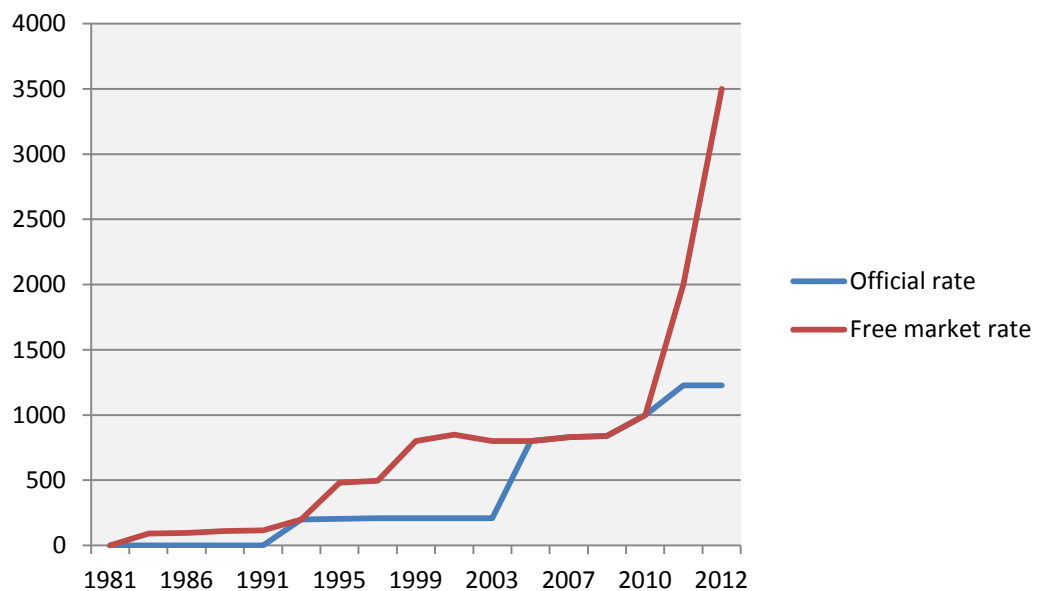
<sup>310</sup> Hassanzadeh, E. "Recent Developments in Iran's Subsidies Reform: Lessons and Recommendations." Global Subsidies Initiative (GSI) of the International Institute of Sustainable Development (IISD), October 2012

<sup>311</sup> Slavin, B. "Iran Sanctions: Preferable to War but No Silver Bullet." June 2011

convince the Parliament that passing the Subsidy Reform Act was urgent if the country was to parry the effect of intensifying sanctions.<sup>312</sup>

The Iranian foreign exchange market also experienced a drastic instability immediately after imposition of the new round of sanctions in January 2012, causing a 250 percent increase in the value of the U.S. dollar against the Iranian rial in October 2012. The Government tried to control the sharp devaluation of the Iranian rial by introducing an official exchange rate of IRR 12,260 in place of the free floating exchange rate of around IRR 35,000 as of January 2013.

**Figure 3.1- The Price of US Dollar in Iran's Foreign Exchange Market (1981-2012)**



**Source: Iranian Central Bank (1980-2012) and author's data collection**

Despite the Government's assertion over availability of adequate gold and foreign exchange reserves, there is unlikely to be any improvement in the country's foreign exchange market and its economy as a whole as long as the country is under immense international political and economic pressures. This is mostly due to the fact that the country is firstly unable to sell a large portion of its oil and secondly receive payments for the portion that it can sell due to restricted access to the international banking system.

<sup>312</sup> Katzman, K. Iran Sanctions." Congressional Research Service, July 2012

### 3.4.2. The Impact on Development of Iran's Energy Sector

The sanctions' primary impact has been on the petroleum industry and financing its development projects. As the petroleum sector is heavily capital intensive, substantial investments are required to expand the sector. Inadequate sources of domestic funding and the country's inability to receive loans from international financial institutions have significantly delayed the development of petroleum projects.<sup>313</sup>

In the mid 1990s, and despite U.S. sanctions, the first major petroleum contract was signed with the U.S. Conoco company, a subsidiary of the Dupont Cooperation, for development of two offshore oil and gas fields in Persian Gulf worth US\$600 million. Following the enactment of ILSA and possible criminal liability for conducting business with Iran, Conoco withdrew from the Sirri A and E oil and gas fields projects. When Conoco withdrew from Sirri project, Total and Petronas replaced it and the companies were never held in violation of ILSA, despite investment of US\$600 million in the project.<sup>314</sup>

Since their imposition, U.S. unilateral sanctions received much opposition from other states particularly in the EU. In November 1996, for instance, the EU, through the Resolution 2271, declared that European companies are capable of non-compliance with ILSA. It was later followed by a waiver under Section 9 (c) of ILSA by the U.S. Secretary of State, Albright, over the TotalFinaElf, Gazprom and Petronas consortium in development of the South Pars field. Italian Eni's US\$3.8 billion investment for the development of the South Pars gas field also progressed despite the U.S. threat over considering sanctions against Eni. The company continued further and signed a five-year buyback contract for the development of Darkhoven oilfield worth around US\$1 billion. Notwithstanding its failed attempts, the U.S. continued threatening companies such as BHP Billiton Ltd and Canadian Sheer Energy Company with imposition of sanctions

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<sup>313</sup> Torbat, A.E. "Impacts of the US Trade and Financial Sanctions on Iran, March 2005

<sup>314</sup> For details of Total and Petronas exemption from U.S. sanctions, read section 3.3.1.1.



when speculations aroused over their involvement in the development of Foroozan – Esfandiar and Balal oilfields.

U.S. and international sanctions, beyond concerns over their actual implementation, have caused reluctance in major firms to investment and operate in Iran's energy sector as a result of rising political risks, and operational costs compared with other petroleum rich countries which offer more attractive conditions to foreign investors.<sup>315</sup> Following the intensification of sanctions in the mid 2000s, key international oil companies, such as major European firms, i.e. Repsol, Royal Dutch Shell and Total, pulled out from some of Iran's major petroleum projects and declined to make further investments or resold their investments to other companies.<sup>316</sup> In July 2008, Total and Petronas, the original South Pars investors, withdrew from an LNG export project at phase 11 of the South Pars, announcing that investing in Iran at a time of growing international pressure over its nuclear programme is "too risky".<sup>317</sup> The Japanese firms also reduced their participation in the development of Iran's massive Azadegan oilfield and later in 2010 completely withdrew from the country.<sup>318</sup> The CISADA legislation also has significant impact on Iran's petroleum industry as it forced the western, Japanese and South Korean energy firms to put on halt sale of gasoline to Iran and investment in Iran's energy sector. The new round of sanctions imposed in 2012 has also made the financial transactions with the Iranian banks almost impossible. Such restrictions are considered the main reasons behind the Western oil companies' decision to wind up their businesses.

In response to major IOCs withdrawal from the country's energy projects, Iran took recourse to eastern firms, including state-owned India Oil Corp., China's Sinopec, and

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<sup>315</sup> Katzman, K. "Iran Sanctions." Congressional Research Service, June 2012

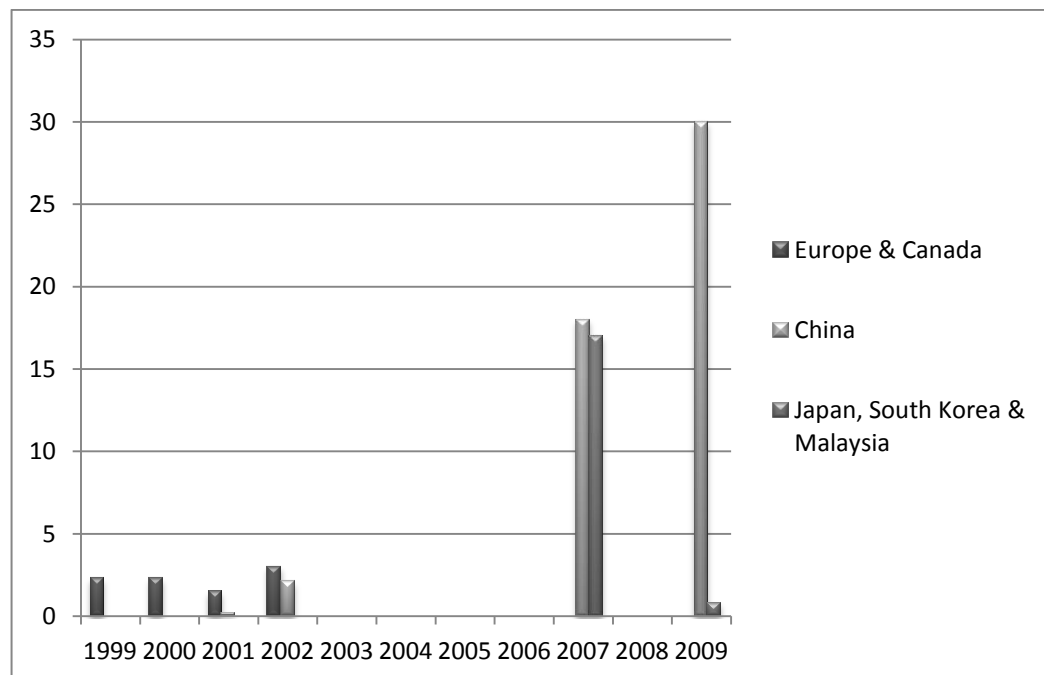
<sup>316</sup> Coredesman, A, et.al., 'U.S. And Iranian Strategic Competition: The Sanctions Game: Energy, Arms Control, and Regime Change', March 2012

<sup>317</sup> "France's Total: Too risky to invest in Iran," In. (July 2008): Washington Post <http://www.washingtonpost.com/wp-dyn/content/article/2008/07/10/AR2008071000026.html>.

<sup>318</sup> Shimbun, Y. "Japanese Firm to Withdraw from Iran Oil Field Project." Daily Yomiuri Online <http://www.yomiuri.co.jp/dy/business/T100930005106.htm> , October 2010

Russia's Gazprom to fill the gap in the development of its oil and gas sector.<sup>319</sup> But in 2012, the U.S. Energy Information Agency (EIA) reported that activities from these sources had also been on decline due to "logistical difficulties experienced as a result of sanctions on technology and financial transactions."<sup>320</sup> In the absence of western companies, China became the largest investor in Iran's energy sector. According to John W. Garver, China committed investment of US\$30 billion only in 2009 (see Figure 3-2).<sup>321</sup> Policy makers and energy experts are sceptical about technical sophistication and experiences of Chinese companies, particularly in technologically complicated projects such as LNG trains, through which Iran had planned to emerge as a major gas exporter.<sup>322</sup>

**Figure 3.2- Investment in Iranian Oil and Gas Sector, 1999-2009 (US\$ billions)**



**Source: Garver, John. W (2010)**

<sup>319</sup> "Iran Sanctions-Impact in furthering U.S. objectives is unclear and should be reviewed," In.: United States Government Accountability Office (GAO), December 2007

<sup>320</sup> Energy Information Agency (EIA) of the US Department of Energy's country report on Iran as of January 2012: <http://www.eia.gov/countries/cab.cfm?fips=IR>

<sup>321</sup> Garver, J.W. "China's Investment in Iran Oil and Gas" Sam Nunn School of International Affairs, Georgia Institute, 2010

<sup>322</sup> Garver, J. et.al. "Moving (Slightly) Closer to Iran China's Shifting Calculus for Managing Its "Persian Gulf Dilemma" *Asia-Pacific Policy Papers* Washington D.C.: The Edwin O. Reischauer Center for East Asian Studies, 2009

The Chinese companies' policies over compliance with international sanctions are not clear. While making announcement over their interest for further investment in Iran's energy industry, China has made long delays in its previously committed projects, such as development of North Pars, South Azadegan and Yadavaran. In August 2012, the Chinese CNPC company withdrew from a project for development of phase 11 of South Pars, suspending a US\$5 billion development contract.<sup>323</sup> After long denial of any impact from sanctions on the economy, the Iranian authorities have admitted sanctions' dramatic affects following the imposition of the new round of sanctions by the EU and U.S. in 2012. In a rare declaration before the Parliament in the late 2011, President Ahmadinejad stated that the current sanctions against Iran were "the heaviest economic onslaught on a nation in history", adding "every day, all our banking and trade activities and our agreements are being monitored and blocked."<sup>324</sup> A few years before there were hopes that if Iran modified its foreign investment regime, the country could minimise the impact of sanctions, hence gaining more opportunities to develop its petroleum sector. Today, however, experts at key energy fields in Iran report that there is little evidence of foreign investment and development activities in Iran, including at the South Pars gas field.<sup>325</sup> At the same time, the country is running short of funding to develop the projects itself as the major source of country's revenue, namely the oil sale, is also under sanction.<sup>326</sup> This is a result of 2012 round of sanctions which drastically affected Iran's oil export capacity. Based on a report from the IEA and OPEC, since the new round of sanctions, Iran's oil production has dropped from 3.706 million bbl/d in 2010 to 2.817 million bbl/d as of July

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<sup>323</sup> *Press TV*, "China to invest USD 20bn tp develop Iranian oil fields: Qasemi", 8July 2012: <http://www.presstv.ir/detail/2012/07/08/249976/china-to-invest-usd-20-bn-in-iran-oil-fields/>

<sup>324</sup> Zakaria, F, "Iran's Growing State of Desperation." *The Washington Post* <http://thecommongood.net/2012/01/irans-growing-state-of-desperation/>, (January4, 2010)

<sup>325</sup> Khajepour, B. CSIS, October 2011

<sup>326</sup> In addition, the monthly cash payments introduced as a mitigation measure to reduce the impacts of subsidies reform, has been reportedly over budget and the government has taken recourse to other sources, including oil and gas field development fund to continue the payment of cash hands-out to the population. Hassanzadeh, E. "Recent Developments in Iran's Subsidies Reform: Lessons and Recommendations." October 2012

2012, reducing its export capacity from 1.9 million bbl/d to 900 thousand bbl/d.<sup>327</sup> In October 2012, IEA also reported that Iran's crude oil deliveries has further fallen to an estimated 860 thousand bbl/d, highlighting the continuing decline in the Iranian oil exports as a result of the intensification of international sanctions.<sup>328</sup>

**Table 3-1- Energy Firms Ending Business with Iran (2009-2010)**

Country	Company	Action
France	Total	Ended investments in Iran
Germany	Linde	Stopped all businesses
India	Schlumberger	Will exit Iran in 2013
	Reliance	Stopped sales of refined products; will not import crude oil from Iran
Italy	Eni SpA	Ended investment in Iran
Japan	Inpex Corp.	Exited from the Azadegan oil field
Kuwait	Independent petroleum Group	Stopped sales of refined products
Malaysia	Petronas	Stopped sales of refined products
Netherlands	Royal Dutch Shell	Ended investment in Iran
Norway	Statoil	Ended investment in Iran
Spain	Repsol	Abandoned negotiations over development of phases 13 and 14 of the South Pars gas field
Switzerland	Vitol	Committed to not supply refined petroleum products to Iran
	Glencore	Committed not to supply refined petroleum products to Iran
Turkey	Tupras	Committed not to supply refined petroleum products to Iran
United Kingdom	BP	Cancelled contracts to supply gasoline to Iran Stopped supplying jet fuel to Iran Air at Germany's Hamburg airport; halted a BP-NIOC joint venture in the Rhum gas field
International	Trans-Adriatic Pipeline	The pipeline will not be used to transport Iranian gas to Europe

**Source: Katzman, Kenneth(July 2012)**

<sup>327</sup> "Growing Impact of Emerging Economies on the Oil Market."Monthly Oil Market Report, OPEC, August 2012

<sup>328</sup> "October OMR Sees Rising OECD Oil Stocks." International Energy Agency (IEA), 15 October 2012

Additionally, Iran's access to the international banking system is strictly limited, causing many problems in receiving payments for the sale of petroleum products.<sup>329</sup> The U.S. officials have estimated that Iran has lost US\$50 to US\$60 billion in foreign investment, since 2010 partly as a result of CISADA and withdrawal of major international oil companies from the country's energy development projects.<sup>330</sup> It is therefore highly unlikely that Iran can attract US\$145 billion new investment by 2015 as stipulated in the Fifth Development Plan.<sup>331</sup>

**Table 3-2-Top Energy Buyers from Iran and Agreed Reductions 2011-2012 (bbl/d)**

Country/Bloc	2011	2012(after cut pledges)
European Union ( particularly Italy, Spain and Greece)	600,000	Negligible as of 1 <sup>st</sup> July No Iranian oil has entered key Rotterdam refinery since February 2012
China	550,000	450,000
Japan	327,000	261,000 (20 percent cut from 2011)
India	310,000	276,000 (11 percent cut from 2011)
South Korea	228,000	194,000 (15 percent cut)
Turkey	196,000	157,000 (20 percent cut)
South Africa	80,000	64,000(20 percent cut)
Malaysia	55,000	44,000 (20 percent cut)
Sri Lanka	36,000	29,000 (20 percent cut)
Taiwan	35,000	28,000 ( 20 percent cut)
Singapore	20,000	15,000 (20 percent cut)
Other	60,000	Cuts unclear
<b>Total</b>	<b>2.50 million bbl/d</b>	<b>1.5 million bbl/d (40 percent lower than 2011)</b>

**Source: IEA & CRC calculations (June 2012)**

<sup>329</sup> Most of the payments have been cleared through Turkish or Indian banking system paying Turkish Lira or Indian Rupiah instead of US Dollar. *Fars News Agency*, "India Pays Rupiah for Iranian Oil." <http://www.farsnews.com/newstext.php?nn=13910514000338> (August 2012)

<sup>330</sup> Einhorn, R.J., 'Implementation of Iran Sanctions', House Committee on Oversight and Government Reform, 29 July 2010

<sup>331</sup> Mohammadian, H., "Iran Oil Industry Need \$145 Billion Investment" *Fars News Agency* <http://english.farsnews.com/newstext.php?nn=8709051481> (November 2008)

Petroleum exports are a key part of the country's national economy and its Government's key source of revenue. In 2010, Iran received some US\$73 billion in petroleum export revenues as the only major source of hard currency compared with earnings of US\$80 billion for all exports, highlighting the country's great reliance on oil export revenue.<sup>332</sup> Although there are arguments over compensating the declining rate of the oil production by increasing natural gas production, it is highly unlikely that the already under-developed natural gas sector can adequately contribute to filling the gap in declining oil production.<sup>333</sup>

Natural gas exports, whether through pipeline or LNG, have also been affected by U.S. and international sanctions. The famous Peace Pipeline to export Iranian natural gas to Pakistan and India faced great opposition from the U.S. Government. Although failure to finalise the export deal can be to some extent attributed to concerns over the security of the pipeline, the pricing mechanism and India and Pakistan's inability to finance or attract financing for the project (see Chapter 2), the U.S. Government's pressure on these two countries to halt any further development of the project has also played a key role.

Iran has also been excluded from gas export projects to Europe under the political pressure from the U.S. administrations, despite the possibility of making Europe less dependent on Russian gas supply. International pressures on other gas export pipelines, including, the controversial Nabucco pipeline for which Iran was considered as a potential supplier, finally caused investors to exclude Iranian gas from consideration.<sup>334</sup> There was also a preliminary agreement to build a second Iran-Turkey pipeline through which the Iranian gas would flow to Europe which has also been put on halt.<sup>335</sup> The exception is, however, the Iran-Turkey gas export deal. Despite the U.S. objections, no

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<sup>332</sup> Esfahani, H, et.al., 'Oil Exports and the Iranian Economy', Faculty of Economics, University of Cambridge, July 2012

<sup>333</sup> Katzman, K. "Iran Sanctions." Congressional Research Service, June 2011

<sup>334</sup> Tarasov, Aleksei. "The Making of Empires: Russia's Gas-Exporting Pipeline V Nabucco." *Journal of World Energy Law and Business* 4, no. 1 (2011)

<sup>335</sup> Coredesman, A, et.al., 'U.S. And Iranian Strategic Competition: The Sanctions Game: Energy, Arms Control, and Regime Change', March 2012

sanctions were imposed on Turkey due to several reasons: first, when the pipeline was constructed, each country was responsible for the construction of its part of the pipeline, hence, the deal was not considered as ‘investment’;<sup>336</sup> secondly, the U.S. State Department did not impose sanctions on the basis that Turkey would import gas from Turkmenistan that would transit through Iran;<sup>337</sup> and finally there were considerations about Turkey’s energy security and reducing its reliance on Russian gas.<sup>338</sup> In CISADA which passed the U.S. Senate in 2010, a few years after the start of Iran-Turkey gas deal, the investment, construction, expansion and upgrading natural gas export pipeline from Iran is strictly banned, which makes it highly unlikely that such U.S. concessions would be granted to any other countries interested in importing Iranian gas. In a recent attempt by the EU in November 2012, even the sustainability of the current export capacity has come under scrutiny in the light of the EU ban on import of Iranian natural gas to European markets. Although Iran has never directly exported gas to the EU, there is speculation that Turkey mixes Iranian gas with the gas from other exporting countries and delivers it to the European markets through its transit pipelines.

International sanctions have also rendered Iran unable to develop its LNG projects. The impact of sanctions on LNG projects has been considerably greater for pipeline projects. Although the original version of ISA did not apply to the development of LNG projects, the newly enforced CISADA specifically includes LNG projects in the definition of petroleum resources, thereby making investment in LNG projects (or supply of LNG tankers or pipelines) sanctionable.<sup>339</sup> Since the withdrawal of major IOCs, Iran’s LNG projects have been marginally developed, with at least one project, namely Persian LNG, being completely cancelled. The country’s national firms and some Chinese companies’

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<sup>336</sup> Kinnander, E. "The Turkish-Iranian Gas Relationship: Politically Successful, Commercially Problematic." 2010

<sup>337</sup> *ibid*

<sup>338</sup> Coredesman, A, et.al., ‘U.S. And Iranian Strategic Competition: The Sanctions Game: Energy, Arms Control, and Regime Change’, March 2012

<sup>339</sup> "Comprehensive Iran Sanctions, Accountability, and Divestment Act of 2010," In.: [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111\\_cong\\_reports&docid=f:hr512.111.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_reports&docid=f:hr512.111.pdf)

efforts to bring on stream Iran's LNG projects have reportedly failed, as the LNG technology is patented by U.S. and European firms, the access which is strictly prohibited and practically impossible.



## **4. Chapter 4- Legal Challenges: The Iranian Investment Framework in the Petroleum Sector**

### **4.1. Introduction**

Iran possesses massive natural resources which require substantial investments for their development. According to the country's 20-Year Development Prospect, by 2020, Iran invests around US\$140 billion for development of its natural resources.

Although the country has been unsuccessful in attracting the required amount of investment, mainly as a result of U.S. and international sanctions (see Chapter 3), some commentators believe that had Iran offered a more attractive legal and fiscal framework for the foreign investment, it could have been effectively more successful in circumventing sanctions and attracting foreign investors.

This Chapter therefore proceeds by reviewing the Iranian contractual regime for development of its petroleum resources. It starts with a brief review of expectations overriding the foreign investor-host states relations. It then focuses on the Iranian foreign investment regime and highlights the background and origin of buyback contracts and reviews the legal and fiscal structure of the buybacks. It also narrates the critiques of the buyback contracts from IOCs' point of view and as they are perceived by NIOC and some of Iranian energy commentators. The Chapter continues to analyse Iran's investment environment and tries to shed some light on the argument over its "unattractiveness". The final section is intended to discuss the role of law in the development of natural resources and economic development in a larger context, and offers additional thoughts on a generally perceived idea that importing the law of 'successful' gas producing countries would bring about the same development outcomes for Iran.

## 4.2. General Remarks on Foreign Investor-Host State Relations

In a broad spectrum, when assessing the effectiveness of a country's investment environment, due regard should be given to the fact that in a petroleum exploration and development project, the two parties, namely the IOC and the state concerned, pursue different objectives. Whereas the IOC's primary objective is to have access to investment opportunities, the state wants access to the IOC's know-how and capital; the state is concerned to maintain its ownership and control over its reserves and production, while the IOC is eager to have bookable reserves and control over the cash flow from the operation.

In order to reconcile these differences, the parties should reach a mutual level of understanding. Foreign investors should appreciate that a country's energy sector is "closely linked to the matter of national sovereignty over its natural resources and energy security."<sup>340</sup> They should also understand that protection of the national economy and the interest of the local population, raising revenue for the state budget, providing energy services to the population and protection of the strategic sectors of the economy are considered some of the major concerns of the host states when they consider the involvement of a foreign investor in development projects.<sup>341</sup>

In return host states should understand the immense risks that are involved in investing in the energy sector, entitling the investors to receive adequate protection and remuneration. The substantial up-front investment and usually long pay-back period, in addition to a complex and inflexible project chain and in many cases an unstable political and economic condition in host states require Governments to adopt certain protective measures to encourage and sustain the flow of investment which is particularly needed in the MENA region. Most Governments have now recognised the critical role that the technology and capital of foreign investors can play in the economic development of

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<sup>340</sup> Sorokina, O. "International Institutions and FDI Incentives: What Are the Available Instruments for Fostering Non-OECD Energy Investment?" International Energy Agency, 2002

<sup>341</sup> *ibid*

developing resource-rich countries. To borrow from John Kinna, “*Governments are now very conscious of their reputations for stability in the international commercial community and loath to interfere with existing agreements without good cause.*”<sup>342</sup> The stability which is of outmost importance for foreign investors does not lie in fixed and rigid contractual clauses nor essentially in guarantees, arbitration clauses or re-negotiation clauses. ‘Good law’ may facilitate investment and reduce legal risks involved in investment transactions; however, in terms of contractual relations, the most important lever to obtain contract compliance is trust and reputation; there is a strong notion among investors that “confidence-building” in transnational business activities plays a crucial role; this is also the case for reputation. As Orr and Ulen state:

*“A Government that credibly commits itself to upholding rights of property and contract enforcement not only provides a basis whereby partners in economic transactions can trust each other; it also reinforces the hope that the Government itself can be trusted to transact honorably and to meet its contractual obligations.”*<sup>343</sup>

Whether Iran has been able to adopt such a ‘good’ investment framework in order to build confidence and reduce investment risks in the country is a subject for a thorough analysis which will be followed in the next sections.

### **4.3. The Iranian Petroleum Contractual Framework**

Contracting for the exploration and development of oil and gas fields in Iran can be traced back for a century. The first contractual arrangements were concluded on a ‘concession’ basis- the well-known D’Arcy concession- based on which the exploration and development of petroleum resources were fully controlled by a foreign petroleum company, possessing capital, know-how and expertise. The foreign company had an extensive and exclusive right to control the resources in the area covered by the

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<sup>342</sup> Kinna, J.C. "Investing in Developing Countries: Minimisation of Political Risk." *Journal of Energy & Natural Resources Law* 89, no. 1983 (1983): 90-99, p.96

<sup>343</sup> Orr, D, and Ulen, T.S. "The Role of Trust and the Law in Privatisation." *Quarterly Review of Economics and Finance* 33, (1993): 135-55, p.3

concession agreement against a royalty and/or tax paid to the Government. The Government's role in these projects and consequently its share in the profits was quite insignificant. Hence, the D'Arcy concession marked the beginning of a period of heavy British influence over Iran's petroleum which led to years of growing demands for nationalisation of the oil industry.<sup>344</sup>

Following the nationalization of the oil industry in 1951 and enactment of the 1957 Petroleum Law, Iran concluded various contracts with foreign companies, including production sharing agreements and service contracts in order to secure a larger share of profit for itself. The 1957 Petroleum Act granted the required authority to NIOC to enter into agreements with domestic and foreign companies "with a view to extending as rapidly as possible the operation of research, exploration, and extraction of petroleum throughout the country and the continental shelf."<sup>345</sup> Therefore, the deteriorating economic and political conditions resulting from taking an extreme stand against foreign companies after the nationalisation of the oil industry, forced the Government to adopt a more moderate approach in which private foreign investment was encouraged while opportunities were also provided for a more pro-active role for NIOC.<sup>346</sup>

In 1974, a new petroleum law was passed by the Parliament imposing significant limitations on the participation of international oil companies in upstream oil and gas operations. According to the 1974 Act, "service contracts" were introduced as the prevailing contractual regime in the Iranian hydrocarbon sector.<sup>347</sup>

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<sup>344</sup> For more detail on the history of Iranian petroleum industry, see Chapter 3.

<sup>345</sup> Wall, E.H. "The Iranian-Italian Oil Agreement of 1957." *International and Comparative Law Quarterly* 7, no. 4 (1958)

<sup>346</sup> Ramazani, R.K. "Choice-of-Law Problems and International Contracts: A Case Study." *The International and Comparative Law Quarterly* 11, no. 2 (1962), p.517

<sup>347</sup> In the literature on the oil and gas industry, a "service-contract" is referred to a contract in which the foreign company, takes the exploration and feasibility risk in return for a share in the production if the venture is successful. In a "service contract", the foreign investor agrees to provide services and know-how and to supply materials having no control of ownership over the project. According to Bindemann, such a contract only works if the mineral sector is well-developed and there exists "a reasonable amount of knowledge about the geological structure of the country." Early service contracts were signed by Petroleos Mexicanos (PEMEX) and Yacimientos Petroliferos Fiscales in the 1950s. However, the concept became more widely

The Act prohibited contracts or ventures that would offer reserve ownership rights to foreign entities. Article 3 of the Act also emphasized the nationalization of the petroleum resources and sanctioned that any activities in respect of exploration, development, production and operation must be exclusively carried out by NIOC. As a result, the Government was no longer authorized to engage in production sharing agreements and for the first time in Iran's history the provisions of the 1974 Petroleum Act gave birth to Iran's first risk-service contracts.<sup>348</sup>

After the 1979 Revolution, all existing oil and gas agreements were revoked and the revolutionary Government assumed full responsibility for controlling and developing Iran's oil industry. Following the Revolution, Iran followed an ideologically isolationist path that emphasised self-sufficiency and independence from foreign investment.<sup>349</sup> The Iranian Government actively took part in shaping the country's overall economic policy through a legal framework in which the prohibition of foreigners' presence in the country's petroleum sector was explicit.<sup>350</sup> After the Iran-Iraq war which imposed substantial damage on the country's petroleum facilities and infrastructure, the Iranian Government faced a dire situation in which it urgently needed capital investment and technology to reconstruct its petroleum industry and keep up the flow of Government revenue through exports of oil. As there was strong legal opposition to foreign investment both in the revolutionary Constitution and the new Petroleum Act of 1987,<sup>351</sup> the Ministry of Petroleum and NIOC had to present a solution which, while being in full compliance with the provisions of the law, would provide a sufficiently attractive contractual

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popular in the late 1960s when Iran and Iraq in particular concluded several such agreements. Bindemann, K., 'Production-Sharing Agreements: An Economic Analysis', Oxford Institute for Energy Studies, 1999

<sup>348</sup> Ebrahimi, S.N., and Shiroui Khouzani, A. 'The Contractual Form of Iran's Buy-Back Contracts in Comparison with Production Sharing and Service Contract', edited by Society of Petroleum Engineers: Middle East Oil Show, June 2003

<sup>349</sup> For more detail on Iran's post-revolutionary foreign policy, see Chapter 3.

<sup>350</sup> Abrahamian, E., *Khomeinism: Essays on the Islamic Republic*: University of California Press, 1993, pp 33–36

<sup>351</sup> See Sections 4.3.1.1 and 4.3.1.2.

framework in order to enable and promote foreign investment in the petroleum sector; the solution presented was buyback contracts.

#### 4.3.1. Origin and Background of the Iranian Buyback Contracts

The legal and contractual regime in the Iranian petroleum sector is highly influenced by the country's history. The agonizing experience of foreigners' dominance over the country's natural resources (see Chapter 3) led to adoption of strict measures in relation to the presence of foreign companies and investors in the petroleum industry.<sup>352</sup> Shari'a law also played a major role in the establishment of post-revolution regulatory system where the sovereignty, in terms of ownership, control and management of mineral and petroleum rights, have been all governed by the Shari'a principles.<sup>353</sup> Also, as reaffirmed by the Ja'afari school of Islamic law<sup>354</sup>, private property in minerals is not lawful, and neither is "extraction to be anything other than a part of the state's commercial activity."<sup>355</sup> The theory stems from a broader Islamic belief that recognition of private ownership of the natural resources will be against public interest as "it will lead to corruption and unfair distribution of such wealth."<sup>356</sup> These provisions have been also explicitly reflected in various articles of the Constitution and the Petroleum Act 1987.

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<sup>352</sup> Marcel, V., *Oil Titans: National Oil Companies in the Middle East*, 2006

<sup>353</sup> Bunter, M., 'An Introduction to the Islamic (Shari'a) Law and to Its Effect on the Upstream Petroleum Sector', *CEPMLP Publication* (2005)

<sup>354</sup> One of the well-known Muslim schools of thought, also known as the 12er Shi'a' school of thought, is Jafari school of thought. It has derived its name from Jafar Sadeq, the 6<sup>th</sup> Shi'a Imam and is followed by Twelvers and Ismailis in general. It differs from other Muslim schools of thought and offers different opinions on matters of inheritance, religious taxes, commerce and governance. Iran has the largest Shi'a Muslim population in the world and its Constitution recognises Shi'a Islam as the primary religion of the country.

<sup>355</sup> Article 4 of the Iranian Constitution reaffirms this principle by stating that all civil, penal, financial, economic, administrative as well as cultural, military, political and other laws and regulations must be based on Islamic criteria. "The 1979 Constitution of Islamic Republic of Iran "

<sup>356</sup> Walied, El-M. "State Ownership of Minerals under Islamic Law" *Journal of Energy & Natural Resources Law* 14, (1996), p.313; Also there is a hadith ( sayings of Imams and Prophet Mohammad) from the Shia's first Imam, Ali Ibn Abu Talib, which describes the ownership scope of the minerals as follow: "This property is neither yours nor mine, but it is the collective property of Muslims, acquired by their swords. If you had taken part with them in their battle, you would have had a share equal to theirs, otherwise, the earnings of their hands cannot be morsels for others' mouths." Nahjol-Balaghah, No. 232, a source of Chapter IV of the Constitution of the Islamic Republic of Iran). Cited in Roberts, P, and Jackson, J. "The Iranian Buyback Concession: The Principle and the Prospects." *International Energy Law and Taxation Review* 7, (2001): 159-61

#### 4.3.1.1. The Constitution

The restrictive provisions concerning the involvement of foreigners in the development of the hydrocarbon sector are spread through various articles of the Constitution. As a matter of general economic and financial principle, Article 43 of the Constitution bans foreign economic “domination” over the country’s economy. Article 45 stipulates that the disposition of public wealth and property, such as ‘mineral deposits’, should be solely in the hands of the Iranian Government. Most notably, Article 44 of the Constitution assigns ownership of all large-scale and “mother industries” to the state.<sup>357</sup> A general interpretation of these articles implies that oil and gas reserves are state-owned and only the Government can and should administer public assets and cannot delegate such authority to other entities.<sup>358</sup> Based on Article 44 and according to Islamic criteria, the private sector is granted a supplementary role in the economic activities of the state and cooperative sectors which include companies and enterprises concerned with production and distribution in urban and rural areas.<sup>359</sup>

The issue of involvement of foreigners in the economic activities of the country is more specifically addressed in Articles 81, 82 and 153. Article 81 clearly provides that *“granting concessions to foreigners for the formation of companies or institutions dealing with commerce, industry, agriculture, services or mineral extraction, is absolutely forbidden.”* But the Article, according to an advisory opinion requested by the Government and rendered by the Council of Experts, does not restrict establishment of foreign companies’ branches in Iran. Furthermore, following the ratification of the Foreign Investment Promotion and Protection Act (FIPPA), any restrictions on registration and incorporation of the foreign companies in Iran have been abolished and

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<sup>357</sup> ‘Mother industries’ include large-scale industries with strategic importance to the nation, and generally includes: minerals, banking, insurance, power generation, dams as well as large-scale irrigation networks, radio and television, post, telegraph and telephone services, aviation, shipping, roads and railroads; Article 44 of the Islamic Republic of Iran’s Constitution;

<sup>358</sup> Me, M. "The Iranian Buyback Model and Its Efficiency in the International Petroleum Market- a Legal View." *Oil, Gas & Energy Law Intelligence* 7, no. 1 (2009)

<sup>359</sup> Article 44, "The 1979 Constitution of Islamic Republic of Iran "

the formation of branches of foreign companies with one hundred percent foreign ownership has been allowed and is currently implemented.<sup>360</sup>

Most controversies over participation of foreign investors in the development of the Iranian petroleum sector come from the provisions of Article 153 which put a total ban on the conclusion of agreements that would result in foreign control over natural resources, economic resources, military affairs, and other strategic sectors; hence, by implication, the Article means that, for example, in the petroleum sector there is no equity right or bookable reserves for IOCs- a restriction from which most criticisms of the buyback regime arise.<sup>361</sup>

Other restrictive provisions may be found in Article 82 which forbids the employment of “foreign experts except in cases of necessity”, and only then subject to Parliamentary approval. Article 83 also requires the same approval condition for the transfer of property to foreigners without which such transfer is prohibited.

As Iran is also a gas importer, it should be clarified that the Constitution provisions do not apply to the import activities, mainly due to the absence of the reasons for which the regulators imposed restrictions on foreign involvement in the country’s petroleum sector. As discussed above, the concern over foreigners’ dominance on the country’s most vital sector through investment and potential ownership of the any segments of the sector caused the revolutionary regulators to impose a ban on direct involvement of foreign investors in the upstream segment of the petroleum sector development in Iran. In gas import, however, there is no such a concern over foreign dominance. Most importantly as gas import is considered as a downstream activity, the regulations permit involvement of foreign entities, in this case, foreign gas for fulfilment of the country’s energy needs.

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<sup>360</sup> Me, M. "The Iranian Buyback Model and Its Efficiency in the International Petroleum Market- a Legal View." 2009, p14

<sup>361</sup> Ramsay, W.C. "Security of Gas Supplies in Europe." In *Nabucco: Conference of the Ministers of Energy (Austria, Bulgaria, Hungary, Romania and Turkey)*: International Energy Agency 2006



#### **4.3.1.2. The Petroleum Act 1987**

The Petroleum Act 1987 was ratified by the Parliament when the country was involved in the war with Iraq and there was a growing sensitivity about foreign investment in economic activities in Iran. Consequently, the new petroleum law placed major restrictions on involvement of foreign companies in the country's petroleum industry. Article 2 of the Act reaffirms the provisions of the Constitution by providing that *"petroleum resources are part of the public domain, which belongs to the Iranian people, and remains at the disposal and control of the Government."*<sup>362</sup> The Act banned any form of direct foreign investment in the oil and gas sector and provided that all petroleum activities should be carried out under the control and supervision of the Ministry of Petroleum. The involvement of local and foreign individuals and companies in the petroleum sector was only permitted according to Article 5, provided that they enter into contracts with the Ministry of Petroleum or its affiliated companies. Article 6 envisages that all capital investment required for petroleum projects should be proposed by the Ministry of Petroleum and be included in the annual budget. This Article, in practice, put major restrictions on the amount of capital to be invested in the petroleum sector.

#### **4.3.1.3. The Budget Acts and the Five-Year Development Plans**

Buyback contracts, as the only contractual framework which allows foreign investment in Iran, was first introduced in the 1993 Budget Act and the Second Five-Year Development Plan (1993-98). According to the Budget Act, NIOC was authorised to enter into contracts with IOCs up to the value of US\$2.6 billion, provided that:<sup>363</sup>

- No equity shall be granted to the contracting party to the oil whether produced or in the ground;

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<sup>362</sup> Article 2, The Iranian Petroleum Act of 1987

<sup>363</sup> The Iranian Gazette, 1993 cited in Ebrahimi, S.N., and Shiroui Khouzani, A. 'The Contractual Form of Iran's Buy-Back Contracts in Comparison with Production Sharing and Service Contract', June 2003

- Instalments shall be paid exclusively from exports of resultant outputs of the project, and therefore no guarantee shall be provided in terms of any shortfall in production;
- Utilisation of Iran's existing potential in designing, engineering, construction and installation shall be maximised;
- Transfer of technology shall be accomplished through joint-venture agreements between local and foreign companies; and
- A minimum of 30 percent of Iranian content shall be achieved.

In order to demonstrate buyback contracts' compliance with the provisions of the Constitution, the Budget Act remained reluctant to envisage any guarantee by the Iranian banks or state enterprises for recovery of costs and profits in the event of production decline or decrease of oil and gas prices.<sup>364</sup> Although the concept of a buyback contract was first created in the Budget Act 1993, it was not until the Budget Act 1994 that the term "buyback" was first mentioned, authorising NIOC to conclude up to US\$3.5 billion worth of development contracts for the Asalooyeh gas refinery and South Pars gas field.<sup>365</sup> The permission granted for foreign investment in oil and gas projects through buyback contracts was also extended in the Second, Third, Fourth and Fifth Five-Year Economic, Social, and Cultural Development Plans.<sup>366</sup>

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<sup>364</sup> Iranian official Gazette, 1994 cited in Ebrahimi, S.N., and A Shiroui Khouzani. "The Contractual Form of Iran's Buyback Contracts in Comparison with Production Sharing and Service Contract." edited by Society of Petroleum Engineers: Middle East Oil Show, June 2003.

<sup>365</sup> Shiravi, A. and S.N. Ebrahimi. "Exploration and Development of Iran's Oilfields through Buyback." *Natural Resources Forum* 30, (2006): 199-206, p. 201

<sup>366</sup> Articles 125 and 126 of the Fifth Development Plan (2010-2015) explicitly introduce buyback contracts as the main contractual method for attraction of foreign investment in the petroleum industry. The Fifth Five-Year Development Plan has also envisaged other financial sources, in addition to buyback contracts, for development of Iran's hydrocarbon sector. These sources are planned to circumvent the impact of international sanctions and include domestic and international bonds, Islamic finance, national banks investment, national development funds as well as establishment of Iranian expatriates joint investment fund, establishment of private bank of oil industry and exploitation of the NIOC's internal fund; Khandan, M. "Ezdiad Bardasht, Challensh-Ha, Forsat-Ha and Zaroorat-Ha (Recovery Rate, Challenges, Opportunities and Necessities)." *Ekteshaf va Tolid (Exploration and Production)* July 2012, no. 91 (July 2012), p. 5

### 4.3.2. The Structure of Buyback Contracts

Buyback contracts were introduced in the early 1990s in order to circumvent a ban by the Iranian Constitution on granting mineral concessions to foreign firms. The first buyback contract was signed with the American based Conoco Oil Company which was cancelled later as a result of the implementation of the Iran-Libya Sanction Act (ILSA) (see Section 3.3.1.1).<sup>367</sup> The French company, Total, subsequently replaced Conoco and entered into an agreement with NIOC for development of the Sirri A and E offshore oilfield with expected rates of return of 20 and 23 percent respectively.<sup>368</sup> The Iranian authorities' first orchestrated attempt to introduce buyback contracts to the international investment market was during a specially held conference in London in July 1998, at which Iran offered more than 40 onshore and offshore fields under the buyback formula to foreign oil and gas companies.<sup>369</sup> The Iranian buyback contract is categorised more as a "risk-service contract", the legal and fiscal terms of which are explained in more detail below.<sup>370</sup>

In addition to oil resources, buyback contracts are also offered for development of non-associated natural gas resources. In such contracts, the fiscal terms are designed based on the volume of condensate recovered alongside natural gas production. In other word, the foreign investors are reimbursed through either the sale of condensate by themselves or sale to a third party and then reimburse them from the cash received.

#### 4.3.2.1. The Definition of Buyback Contracts

In the international investment domain, a buyback contract is generally considered a counter-trade transaction mainly used where, for any reason, direct investment or regular methods of payment is restricted.<sup>371</sup> In order to overcome the same prevailing restrictions

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<sup>367</sup> For more detail of U.S. and international sanctions, see Chapter 3.

<sup>368</sup> Bindemann, K., 'Production-Sharing Agreements: An Economic Analysis', 1999, p.75

<sup>369</sup> Fesharaki, F., and. Varzi, M. "Investment Opportunities Starting to Open up in Iran's Petroleum Sector", 2000

<sup>370</sup> Bindemann, K., 'Production-Sharing Agreements: An Economic Analysis', 1999

<sup>371</sup> Me, M. "The Iranian Buyback Model and Its Efficiency in the International Petroleum Market-

during and after the Cold War, counter-trade transactions flourished internationally between the politically divided East and West. The first counter-trade agreement, which was a kind of “barter contract”,<sup>372</sup> was signed in 1969 between an Austrian and a German metallurgical company on one side and the Soviet Union on the other, based on which the Soviet contractor committed to supply (export) a certain volume of natural gas in return for the import of pipeline.<sup>373</sup>

A buyback contract is generally referred to as a transaction in which one party supplies a production facility, and the parties agree that the supplier of the facility, or a person designated by the supplier, will buy the products resulting from that production facility.<sup>374</sup>

The UNCITRAL Legal Guide also provides a definition for a buyback contract, according to which a buyback is “*a transaction in which the supplier of the facility often provides technology and training and sometimes component parts or materials to be used in the production. The supply of a production facility usually requires bank financing.*”<sup>375</sup>

In simple terms, buyback contracts in the Iranian petroleum sector are defined as contracts between NIOC and an IOC, in which the IOC agrees to develop an oil or natural gas field and then to hand the field over to NIOC once production starts.<sup>376</sup> The IOC in return will be repaid based on certain percentages of the production of the field and an

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a Legal View." 2009

<sup>372</sup> Barter contract is a counter-trade agreement based on which goods and services are directly exchanged for other goods and services without the use of money as a means of purchase or payment. Marin, D, and Schnitzer, M. *Contracts in Trade and Transition: The Resurgence of Barter*: Massachusetts Institute of Technology, 2002

<sup>373</sup> The US\$10 million worth buyback contract for supply of Siberian pipeline construction, the Soviet party undertook to pay the performed construction and delivered equipment with the delivery of 30bcm natural gas to a consortia of American, European and Japanese companies; Kerkovic Milenkovic, T. "Drafting an International Buy-Back Agreement." *Facta Universitatis Series: Economics and Organization* 2, no. 2 (2004), p. 167

<sup>374</sup> Kerkovic Milenkovic, T. "Drafting an International Buyback Agreement." *Facta Universitatis Series: Economics and Organization* 2, no. 2 (2004), p. 167

<sup>375</sup> UNCITRAL Legal Guide on International Countertrade Transactions, Chapter I, paragraph no. 16

<sup>376</sup> Me, M. "The Iranian Buyback Model and Its Efficiency in the International Petroleum Market- a Legal View." 2009

agreed-upon rate of return.<sup>377</sup> In addition, based on the Iranian buyback model, once the contractor is being repaid, it no longer shares in the project's profit.

#### **4.3.2.2. The Legal and Fiscal Terms**

The Iranian buyback framework has undergone an evolutionary process since its inception in mid 1990s. In early buyback contracts, before a buyback was signed for development of a field, exploratory activities had already been carried out and the economic viability of the project was proven. IOCs were then invited to tender and provide a Master Development Plan (MDP)<sup>378</sup> based on the data and information which had been collected during the exploration stage.

In 2003, Section 21 (f) of the Budget Act 2003 authorised NIOC to enter into buyback contracts, in which IOCs would pay for exploration and development of the oil and gas fields, except those in the Caspian Sea, the Persian Gulf, and in four oil-rich provinces in the south of Iran, including Khuzestan, Bushehr, Kohkiluyeh and Ilma. Accordingly and depending on a project development stage, NIOC would decide to offer buyback contracts in three different forms: Exploration Service Contract (ESC), Development Service Contract (DSC), and Exploration and Development Service Contract (EDSC). In the ESC stage, in the event of a commercial discovery, the IOC is entitled to full cost recovery; however, in the absence of a commercial discovery, the IOC bears all financial losses. The DSC resembles the conventional buyback contracts where exploration activities have already been conducted and the contract is offered for the development of the fields. The third scheme, namely EDSC, differs from the other two schemes for various reasons:<sup>379</sup>

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<sup>377</sup> Ghandi, A, and Lin, C. "Do Iran's Buy-Back Service Contracts Lead to Optimal Production? The Case of Soroosh and Nowrooz", *Energy Policy* 42, (March 2012): 181-90, p.2

<sup>378</sup> The MDP is a major component of the buyback contracts and encompasses critical information on each development phase and objectives of the project.

<sup>379</sup> For a complete review of the new buyback scheme, see Shiravi, A., and Ebrahimi. S.N. "Exploration and Development of Iran's Oilfields through Buyback.", 2006

- When contracting an EDSC, the parties are not yet able to agree on an MDP in order to define the scope of the work for developing the field, as the field has not yet been discovered;
- A capital expenses ceiling for the development stage should be agreed upon once a commercial field is discovered;
- The percentage of oil and gas to be allocated to the IOC for the purpose of cost-recovery and remuneration fee- though very important to determine the project's viability- will be agreed upon after a commercial field is discovered; and
- The IOC, in addition to the risks involved in the development project, should bear the risks of non-discovery of a commercial field.

For each stage an MDP should be presented by the IOC and upon approval of NIOC the next stage can commence. A preliminary advantage of such approach is that the contractor enters into a concrete contractual framework before starting the initial development activities. But the privilege is not very promising as the contractor still needs the NIOC's approval for award of the major phase, namely the development phase despite having a priority right over the other potential contractors to implement the development operation.

Generally, in buyback contracts, the contractor's recovery of petroleum costs and remuneration is ascertained through a long-term export oil sales agreement (LTEOSA). Under the agreement, the contractor "buys" a certain portion of the oil - known as "repayment oil"- produced from the developed field at the market price. The term of the LTEOSA continues until the contractor is reimbursed for all its petroleum costs and remuneration.

The fiscal structure of buyback contracts features different stages of expenditure which include: Capital cost (Capex), Non-capital cost (non-Capex), Operating cost (Opex) and Bank charges.

Capital costs include the direct cost of development operations and are recoverable up to the agreed-upon ceiling. Thus, any costs incurred by the IOC which go beyond the ceiling will not be reimbursed. Indirect costs are the funds paid by the IOC to the Government for projected taxes, social security charges, customs duties and other levies. Operational costs cover the IOC's expenses during the project operation and before handing it over to NIOC. For Opex, no cap is placed; hence, all Opex costs are recoverable. Finally, bank charges include the cost of financing the project. The bank charges are calculated based on London Interbank Offered Rate (LIBOR) plus an extra agreed upon interest percentage.<sup>380</sup> All these costs are recoverable provided that, firstly, the objectives of the contract as stipulated under the MDP materialise, secondly, the authenticity of the costs are verified by NIOC or an international auditor, and thirdly, costs should be correctly categorised in accordance with the accounting procedure annexed to the contract.<sup>381</sup>

In addition to costs, a remuneration fee is also envisaged in buyback contracts which is generally a fixed amount agreed upon by the parties to be paid to the IOC as a reward for its investment and the risks taken.<sup>382</sup> The remuneration fee will be paid if the objectives of the contract and MDP are fully met and the project is successfully handed over to NIOC.<sup>383</sup> The fees recoverable by the IOC are paid through allocation of a certain portion of outputs of the projects, which is usually around 50-60 percent. Since the IOC does not have any right to the oil or gas in place, or the oil at the wellhead and export point, NIOC either sells the oil and gas to the IOC itself or to a third party.<sup>384</sup>

The buyback provisions also provide for a requirement that the acquired lands and purchased assets for the purpose of a project development should be the sole property of NIOC. The operating company is also obliged to use at least 51 percent local content to

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<sup>380</sup> Mohammad, N. "The New Face of Iranian Buyback Contract: Any Hope for Foreign Investment?" *Oil, Gas & Energy Law Intelligence* (April 2009), p.11

<sup>381</sup> Shiravi, A., and Ebrahimi, S.N. "Exploration and Development of Iran's Oilfields through Buyback.", 2006, p.202

<sup>382</sup> *ibid*

<sup>383</sup> *ibid*

<sup>384</sup> Ebrahimi, S.N., and Shiroui Khouzani, A. 'The Contractual Form of Iran's Buy-Back Contracts in Comparison with Production Sharing and Service Contract', June 2003

give the local companies a competitive advantage. In comparison with other petroleum development contracts, the conventional buyback contracts have a shorter life - about 7-10 years- with a possible extension for an additional 5 years as an ‘investment recovery period’.

Buyback contracts are reportedly more popular for the production of oil than gas which is a more challenging commodity to commercialise.<sup>385</sup> In buyback contracts for the development of natural gas resources, normally there is no specific price per unit in the buyback contract and it only stipulates the agreed upon remuneration and internal rate of return.<sup>386</sup> Also, as natural gas development is different from oil in a sense that it requires an integrated value chain from production to the end-users, there are uncertainties over the possibility and indeed the necessity of extension of the contracts to downstream segments of gas production activities, particularly LNG production.

#### **4.3.3. The Critiques of Buyback Contracts**

Since its introduction as Iran’s contractual regime for the development of its oil and gas sector, buyback contracts have received many criticisms from both IOCs and the NIOC’s officials. These critiques are reviewed in more detail in the following section.

##### **4.3.3.1. Risks of Buyback Contracts as Perceived by IOCs**

**No equity right and unbookable reserves-** one of the IOCs’ major complaints is that as a contractor under buyback contracts, they should only supply capital and technology and hand over the project to NIOC after it is fully developed without having the right to add the reserves to their portfolio. Granting equity stakes to IOCs is almost excluded in most large resource-rich countries in the region. The public in many countries of the Persian Gulf are unlikely to accept “foreign control of the prized oil reserves, as the legacy of the

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<sup>385</sup> Roberts, P, and Jackson, J. "The Iranian Buyback Concession: The Principle and the Prospects." 2001

<sup>386</sup> Groenendaal, W. J. H van, and Mazraati, M. "A Critical Review of Iran's Buyback Contracts" *Energy Policy* 34, (2006): 3709-18, p.3713



pre-nationalisation days of the Seven Sisters<sup>387</sup> lingers.”<sup>388</sup> In the case of Iran, the Iranian negotiators explain that the IOCs’ request for oil price exposure-that is to own the oil reserves- has been denied because they are concerned that the foreign companies could claim a value for future oil in an event of compensation. In other words, in the event of expropriation, Iran would have to compensate what ‘could have been’ produced in the future.<sup>389</sup>

**Fixed rate of return-** the other major critique made against buyback contracts is the fixed rate of return of 10-12 percent and the inflexible expenditure ceiling, exposing IOCs at the risk of non-compensation in case of an overestimation of revenues or underestimation of costs.<sup>390</sup> Also, an IOC is not compensated for the postponement of payments or for necessary expenditures above the amount agreed upon in the contract.<sup>391</sup>

The IOCs argue that the fixed rate of return does not provide them with the required incentives to the improve total return from the project, such as discovery of additional reserves, employing enhanced oil recovery techniques as well as introducing cost saving measures below the contract specifications and optimising production target.<sup>392</sup> NIOC officials however make a counter-argument that in a buyback contract IOCs receive a fair return on their investment as they bear no price and technological (exploration and exploitation) risks.<sup>393</sup>

**Short life of buybacks-** according to IOCs, the relatively short duration of buyback contracts undermines their long-term investment planning and profitability. They argue

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<sup>387</sup> The Seven Sisters consist of Standard Oil of New Jersey (American, future Exxon Corp.), Royal Dutch-Shell (Anglo-Dutch), The Anglo-Iranian Oil Company (later British Petroleum), Texaco (American), Socony-Mobil Oil (American), Gulf (American) and SOCAL-Standard Oil of California (American) (Gulf, SOCAL and then Texaco later merged to create Chevron).

<sup>388</sup> Marcel, V., *Oil Titans: National Oil Companies in the Middle East*, 2006

<sup>389</sup> *ibid*, p.4

<sup>390</sup> Groenendaal, W. J. H van, and Mazraati, M. "A Critical Review of Iran's Buyback Contracts." 2006, p. 3715

<sup>391</sup> *ibid*, p.3709

<sup>392</sup> Farnejad, H. ‘Strategic Approach & Legal Implications of Investment in Geopolitically Sensitive Iran’ University of Dundee, 2006

<sup>393</sup> Groenendaal, W. J. H van, and Mazraati, M. "A Critical Review of Iran's Buyback Contracts." 2006, p.3709

that the short-term of buyback contracts might well suit the development of the low risk and short-term projects; but it is less suitable for complex projects and reservoirs with higher risks and longer duration of dependence of value on long term field performance.<sup>394</sup>

**Oil price risk-** although the oil price risk is fully borne by the Iranian Government , IOCs are concerned that if the international prices of oil and gas drop to lower than the level agreed upon, the reimbursement of the capital expenditure, bank charges and remuneration may be postponed.

#### **4.3.3.2. Critiques of Buyback Contracts from the NIOC's Perspective**

Some NIOC officials and Iranian energy specialists also criticise buyback contracts for not serving the long-term interests of the country. They argue that the buyback contracts' requirement for transfer of the fields' operation to NIOC would damage their long-term development as NIOC lacks the required technology and expertise to cope with the reservoir behaviour over time, resulting in a failure to maintain and enhance production.

Iranian economists also denounce the buyback contract, for giving a “hefty return” on the IOCs' investment (London Interbank Offered Rate plus 1 percent; i.e. 15-20 percent profit according to Amuzegar) without bearing any geological or financial risks as oil and gas fields are already discovered and all potential decline risks in oil prices are borne by NIOC.<sup>395</sup>

In general, experts argue that buyback contracts expose NIOC to many risks, including:

- Potential failure to optimally achieve the high production profile at the early stage of production;

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<sup>394</sup> Marcel, V., *Oil Titans: National Oil Companies in the Middle East*, 2006

<sup>395</sup> Amuzegar, J. 'Iran's Oil as a Blessing and a Curse', *Brown Journal of World Affairs* XV, no. I (2008)

- IOCs' sub-optimal production in the early stage in order to assure the sufficient revenue during early production;<sup>396</sup>
- Overestimation of capital expenditure (Capex) in order to increase remuneration and bank charges;
- The fixed rate of return would place all financial risks on NIOC, if prices fluctuate;
- Short life of buybacks does not oblige IOCs to transfer the required technologies throughout the operation phase of the project; it is particularly important during the decline phase of the project when the application of new technologies is most needed.

A case-study conducted by Ghandi and Lin in 2012 on Soroosh and Nowrooz oil fields showed that NIOC's production after taking over the developed field has been notably inefficient.<sup>397</sup> They argue that NIOC has failed to achieve its own objective of maximising cumulative production which can partially be attributed to the contract's terms of NIOC operatorship. Concerns over continuation of decline in the production rate have reportedly forced NIOC officials to propose amendments in future buyback contracts, requiring IOCs to train NIOC's personnel during the development phase, so as to enable them to effectively handle the operation afterwards. Ghandi and Lin conclude that the new amendment suggests that "NIOC acknowledges its failure in the operation of the developed fields, including Soroosh and Nowrooz."<sup>398</sup>

#### **4.3.4. Recent Developments in Iranian Buyback Contracts**

Growing criticisms against buyback contracts and their allegedly 'unattractiveness' for foreign investors, combined with the Iranian Government's determination to improve the country's investment climate, have brought about creeping changes in the buybacks' legal and fiscal structure. In December 2009, Iran signed a buyback contract with Chinese

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<sup>396</sup> *ibid*

<sup>397</sup> Ghandi, A, and Lin, C. "Do Iran's Buy-Back Service Contracts Lead to Optimal Production? The Case of Soroosh and Nowrooz", March 2012, p.30

<sup>398</sup> *ibid*,p.31

Sinopec whose terms were perceived by many as surprising.<sup>399</sup> The contract was signed for development of Yadavaran field and offered better terms of investment, including:

- A better payback period which was reduced to around 4 years almost half that of earlier buyback contracts;
- The rate of return was increased to 14.98 ( from its previous 10-12 percent) with no risk, embedding a premium of 3 percent comparing to older contracts;
- For the first time, flexibility towards potential cost escalation was envisaged in the contract which significantly reduced investment risks.<sup>400</sup>

One of the major changes in the new model is a more flexible and realistic approach toward projects' costs calculation. The new model encompasses provisions which state:

*“capital costs ceiling for the development operations of Phase 1 [exploration] shall be determined by the Parties in accordance with the call for tender process and principles, procedures and the costs break-down items ... within the schedule period of .... as envisaged in the MDP. It is understood and agreed that the same call for tender process and the details of principles, procedures and costs break down items will be utilized for the determination of capital costs ceiling for the Development Operations of Phase 2 [field development.]”*<sup>401</sup>

Although the aforementioned clause is considered a break-through in a buyback contract, there are concerns that the actual authorities' practice, and the clauses in the final draft of buyback contracts, may not reflect the flexibility intended by the above-mentioned provisions.<sup>402</sup>

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<sup>399</sup> Dittrick, P., 'Yadavaran Buyback Contract Signals Better Iranian Terms', *Oil, Gas & Energy Law Intelligence* 7, no. 1 (2009), Me, M. "The Iranian Buyback Model and Its Efficiency in the International Petroleum Market- a Legal View." 2009

<sup>400</sup> Dittrick, P., 'Yadavaran Buyback Contract Signals Better Iranian Terms', *Oil, Gas & Energy Law Intelligence* 7, no. 1 (2009)

<sup>401</sup> Cited in Me, M. Me, M. "The Iranian Buyback Model and Its Efficiency in the International Petroleum Market- a Legal View." 2009

<sup>402</sup> *ibid*

A set of incentives are also introduced in the new buyback models to encourage better performance by the IOCs. These incentives include:

- An alternative ceiling on the rate of return if actual quarterly production exceeds the production profile envisaged in the MDP; and
- Payment of additional percentages of the remuneration fee, if the IOC increases the Iranian content beyond the mandatory percentage.<sup>403</sup>

More significantly, the new model envisages the possibility of extending the terms of the contract for contractor's full recovery (possibly to 12-15 years). Such provisions provide great relief for contractors who have been facing the risk of expiry of the contract before making complete cost recovery as this was the case in the old model where amortisation could not continue beyond the expiry of the contract.<sup>404</sup>

The new buyback model additionally envisages the continuation of the existence of the Joint Management Committee (JMC) from the project's inception and beyond, in order to have the IOCs' managerial expertise onboard throughout the life of the contract. It also requires the establishment of sub-committees for technical, administrative, financial and legal matters affecting the development of the project in different stages of exploration, appraisal and development which enable both IOCs and NIOC to better evaluate the project's optimal development.<sup>405</sup>

IOCs' reactions to buyback contracts vary; while there were dissatisfactions among larger IOCs, including Shell, Total and Eni with regard to efficiency of buyback contracts,

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<sup>403</sup> *ibid*

<sup>404</sup> The relevant provisions read as follow: *"In the event that the Petroleum Costs and Remuneration Fee are not fully paid by the end of the "First Amortization Period" if only the Development Operations of Phase 1 is implemented by Contractor, or the "Second Amortization Period" the Development Operations of Phase 2 is implemented by the Contractor, as set forth above and such non-recovery has not been resulted from the fault of Contractor or from not achieving the forecasted production of Crude Oil, the outstanding balance will be recovered by Contractor during the remaining Term of the Contract until such Petroleum Cost and Remuneration Fee are recovered or where applicable under the Contract as per Clause 3.2., save as to the price of the oil, the Term of the Contract to be reviewed and extended by mutual agreement of the Parties accordingly."* Cited in Me, M. "The Iranian Buyback Model and Its Efficiency in the International Petroleum Market- a Legal View." 2009

<sup>405</sup> *ibid*

smaller hence less influential companies such as Norwegian Statoil announced their general satisfaction with the buyback regime, suggesting “certain amendments that would improve future deals.”<sup>406</sup> The new contractual and fiscal terms introduced in the buyback contracts have not been yet included in any new development contracts with western IOCs as a result of international sanctions and lack of interests from investors to participate in development of Iran’s petroleum sector; but it is likely that the new terms will be received more openly by IOCs if international political pressures on Iran ease.

#### 4.4 The Iranian Foreign Investment Regime

Despite all the criticisms against buyback contracts and before the country being hard hit by international sanctions, Iranian buyback contracts were relatively successful in attracting foreign investment to the country’s hydrocarbon sector. According to Katzman, in the early stage of opening-up its petroleum sector to foreign investors in late 1990s, Iran attracted more than US\$8 billion worth of foreign investments in its oil and gas sector. Also as shown in Table 4.1 below, the aggregate value of Iran’s investment contracts with international companies since 1999 is worth over US\$70 billion.

**Table 4-1- Major Proposed Investments in Iran’s Energy Sector (1999-2011)**

Date	Field/Project	Investors	Value
Feb 1999	<b>Doroud (oil)</b>	<b>Total/ENI</b>	<b>US\$1 billion</b>
Apr 1999	<b>Balal (oil)</b>	<b>Total/Bow Valley/ENI</b>	<b>US\$300 million</b>
Nov 1999	<b>Soroush and Nowruz (oil)</b>	<b>Royal Dutch Shell/Japex</b>	<b>US\$800 million</b>
Apr 2000	<b>Anaran Bloc (oil)</b>	<b>Norsk Hydro &amp; Statoil/ Gazprom &amp; Lukoil</b>	<b>US\$105 million</b>
Jul 2000	<b>Phases 4 &amp; 5, South Pars</b>	<b>ENI</b>	<b>US\$1.9 billion</b>
Mar 2001	<b>Caspian Sea oil Exploration</b>	<b>GVA Consultants</b>	<b>US\$225 million</b>
Jun 2001	<b>Darkhovin (oil)</b> Eni told CRS in	<b>ENI</b>	<b>US\$1 billion</b>

<sup>406</sup> Iran Daily. [www.irandaily.ir/1384/2274/html/focus.htm] cited from Kakhki, M.Hedayati. "A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems." May 2008

	April 2010 it would close out all Iran operation by 2013		
May 2002	<b>Masjid-e-Soleyman (oil)</b>	<b>Sheer Energy/CNPN</b>	<b>US\$80 million</b>
Sept 2002	<b>Phases 9 &amp; 10, South Pars</b>	<b>LG Engineering and Construction</b>	<b>US\$1.6 billion</b>
Oct 2002	<b>Phases 6-8, South Pars</b> Statoil exempted from sanctions in 2010 after pledge to exit Iran	<b>Statoil</b>	<b>US\$750 million</b>
Jan 2004	<b>Azadegan (oil)</b> Investor pulled out	<b>Inpex 10 percent stake. CNPC agreed to develop north Azadegan</b>	<b>US\$200 million ( Inpex stake); China US\$1.76 billion</b>
Aug 2004	<b>Tusan Block</b> Oil found in 2009, but not in commercial quantity	<b>Petrobras</b>	<b>US\$178 million</b>
Oct 2004	<b>Yadavaran (oil)</b> delayed	<b>Sinopec</b>	<b>US\$2 billion</b>
Dec 2006	<b>North Pars Gas Field</b> Work crews reportedly pulled from the project in early 2011	<b>China National Offshore Oil Co</b>	<b>US\$16 billion</b>
Feb 2007	<b>LNG tanks at Tombak Port</b>	<b>Daelim ( S. Korea)</b>	<b>US\$320 million</b>
Feb 2007	<b>Phases 13 &amp; 14, South Pars</b> Investors pulled out	<b>Royal Dutch Shell/ Repsol</b>	<b>US\$4.3 billion</b>
Jul 2007	<b>Phases 22-24, South Pars</b> Contract not finalised	<b>Turkish Petroleum Company (TPAO)</b>	<b>US\$12 billion</b>
Dec 2007	<b>Golshan and Ferdows onshore and off-shore gas fields and LNG plant</b>	<b>SKS Ventures, Petrofield Subsidiary (Malaysia)</b>	<b>US\$15 billion</b>
2007	<b>Jofeir Field (oil)</b> Contractors sanctioned under ISA in 2010 and 2011	<b>Belarusneft/ Naftiran</b>	<b>US\$500 million</b>
Feb 2008	<b>Lavan Field</b>	<b>PGNiG (Poland)</b>	<b>US\$2 billion</b>

	Delay caused Iran to void PGNiG contract		
Apr 2008	<b>Kish gas field</b>	<b>Oman</b>	<b>US\$7 billion</b>
June 2008	<b>Resalat oil field</b>	<b>Amona (Malaysia), joined by CNOOC and COSL</b>	<b>US\$1.5 billion</b>
Jan 2009	<b>North Azadegan</b>	<b>CNPC</b>	<b>US\$1.75 billion</b>
Mar 2009	<b>Phase 12, South Pars</b> Project stalled due to sanctions	<b>Indian firms (ONGC, Oil India Ltd, Hinduja and Petronet); Sonanagol (Angola) and PDVSA (Venezuela)</b>	<b>US\$8 billion</b>
Oct 2009	<b>South Pars— Phases 6-8 gas sweetening plant</b> Contract abrogated by S. Korean firm	<b>G and S Engineering and Construction ( S.Korea)</b>	<b>US\$1.4 billion</b>
Nov 2009	<b>South Pars: phase 12, part 2 and 3</b>	<b>Daelim (part 2) and Tecnimont (part 3)</b>	<b>US\$4 billion</b>
Feb 2010	<b>Phase 11, South Pars</b> CNPC pulled out in October 2011	<b>CNPC</b>	<b>US\$4.7 billion</b>
Dec 2011	<b>Zaagheh oil field</b> Preliminary deal signed	<b>Tatneft (Russia)</b>	<b>US\$1 billion</b>

**Source: Katzman (2012)**

However, intensifying international sanctions since 2006-7 made almost all major IOCs pull out from their projects in Iran or decline to make further investments. As a result, Iran lost around US\$70 billion in investment for which it had entered into agreements with foreign investors. Although some of the investment voids were “backfilled” by Asian firms, such as those from China, Malaysia, Vietnam and countries in Eastern Europe, as shown in Table 4.1, many such “backfilled” deals remain in preliminary stages, due to unfavourable terms or the technical incapability of the investor or stalled as investors have reconsidered whether to risk U.S sanctions.<sup>407</sup>

Therefore, one may conclude that the contractual regime has not been as powerful as international sanctions in depriving Iran of substantial attraction of foreign investment.

<sup>407</sup> Katzman, K. "Iran Sanctions." Congressional Research Service, July 2012



Conclusion of over US\$70 billion worth of investment under buyback contracts proves IOCs' interest to invest in the Iranian hydrocarbon sector, weakening the argument over buybacks' "unattractiveness". Since late 1990s, the Iranian Government and the regulator have also significantly modified the Iranian investment regulatory system, providing a safe and low-risk investment climate for investors. Although there is huge potential for further improvement in the country's investment regime, new laws and regulations, as will be reviewed below, can play an important role in building trust and improving investors' confidence in the Iranian investment regulatory and contractual framework.

#### **4.4.1. The Foreign Investment Promotion and Protection Act (FIPPA)**

The Foreign Investment Promotion and Protection Act (FIPPA) is considered as a remarkable move made by the reformist Government of President Khatami, aiming at reforming and improving the old and inefficient investment framework of Iran and its supporting regulatory regime.

FIPPA came into force in 2002 after a long disagreement between the Parliament and the Council of Experts over its ratification. As explained in Chapter 3, the lawmaking process in Iran is complicated, as the legislative process requires all approved Parliamentary bills to be verified by another clerical body –The Council of Experts- based on the provisions of Shari'a and the Constitution. In the case of rejection of the bill by the Council of Experts and the Parliament's insistence on the bill's final ratification, a third body, known as the Expediency Council, is created to adjudicate between them.<sup>408</sup> The latter body has the ultimate authority to approve provisions which have already been considered unconstitutional by the Council of Experts for the sake of the national "*Maslahat*". The concept of "*Maslahat*" which is generally translated to 'expediency' is a political manoeuvring tool employed to deem certain actions legal for the sake of overall national interest, despite being officially illegal. The Expediency Council is the sole authoritative

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<sup>408</sup>Hakimian, H. "Institutional Change, Policy Challenges, and Macroeconomic Performance: Case Study of the Islamic Republic of Iran (1979-2004)", Washington D.C.: The International Bank for Reconstruction and Development, The World Bank, 2008, p.26.

body in Iran who can resort to “*Maslahat*” to overcome deadlocks on key policy issues which are recognised as unconstitutional or against Shari’a law. Therefore, the approval of FIPPA, though recognised as unconstitutional, has created precedence in favour of the possibility of future changes in the Iranian legal framework if the national interest so requires.

FIPPA maintains most of the provisions of its predecessor, the 1956 Law for the Attraction and Protection of Foreign Investment (LAPFI). However, it goes beyond and provides protection for investment schemes not covered under the latter. FIPPA virtually provides for all activities by foreign investors, whether in the form of direct investment or through non-equity participation and also provides protection for civil partnership; build, operate and transfer (BOT) schemes and service contracts, such as buyback agreements.<sup>409</sup>

Despite its modern provisions for protection of foreign investors, FIPPA has been criticised for having a strict reading of the Constitution.<sup>410</sup> It is argued that according to Article 3 (a), direct foreign investment is only allowed in the fields where activities and operations by the private sector are authorised, opening a limited portion of the economy to the private sector. However, the Act’s permission for foreign investment within the framework of “civil partnership” and “buy-back” arrangements in all sectors is in direct conflict with the Constitutional provisions which strictly prohibit involvement of private sector in the strategic industries, such as oil and gas sector and the related exploitation, exploration and export activities.<sup>411</sup> The provisions of FIPPA not only permit foreign participation in the Iranian strategic industries, but it also removes all restrictions on the percentage of foreign shareholdings (Article 2.b.1.2), and consequently by implication, solves the problem of foreign ownership restriction by indicating that so long as a foreign investment project does not place more than a certain percentage of the relevant economic

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<sup>409</sup> Article 3(b), *The Iranian Foreign Investment Promotion and Protection Act of 2002* (FIPPA)

<sup>410</sup> Brexendroff, A, et.al., ‘The Iranian Buy-Back Approach’, *Oil, Gas & Energy Law Intelligence* 7, no. 1 (2009)

<sup>411</sup> Article 3 (b), *The Iranian Foreign Investment Promotion and Protection Act of 2002* (FIPPA)

sector under control, foreign capital ownership in a single project is admissible.<sup>412</sup> The interpretation of Article 44 of the Constitution by the Expediency Council in 2004 also supports the provisions of FIPPA and permits the private sector to participate in downstream oil and gas activities but excludes the direct participation of the private sector in upstream activities.

Although FIPPA has been criticised for its failure to provide a clear dispute settlement method and introduce international regulations for governing competitive tenders, it is widely endorsed as a modern and efficient legal framework for investment promotion and investors' protection. It has simplified the procedure for admission of foreign investors by obtaining an 'investment license' from the Organisation for Investment and Economic and Technical Assistance in Iran (OIETAI). FIPPA has also envisaged that the investors' capital and profits are convertible and transferable creating a strong sense of security and assurance. In addition, it has shortened the bureaucratic processes involved in admission of foreign investment and improved transparency and business planning.<sup>413</sup> It has also provided for strong safeguards against expropriation and the political risk of adverse legislation.

#### **4.4.2. The Law on International Commercial Arbitration**

International investors are increasingly concerned that in the event of a dispute with the host state, the dispute will be referred to domestic courts with the risk of rendering biased and unfair judgement. Therefore, inclusion of an arbitration clause in the investment agreement is of outmost importance for the investors. At the same time, host states are reluctant to confer to a foreign tribunal the right to adjudicate over the country's domestic affairs, particularly, the sensitive issues relating to the development of the oil and gas sector which are generally considered as a matter of sovereignty and national security.

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<sup>412</sup> Sabahi, B. "Foreign Investment in Iran, in Light of the Passage of "Foreign Investment Promotion and Protection Act" (FIPPA, 2002)." *Oil, Gas & Energy Law Intelligence* no. 1 (2004)

<sup>413</sup> *ibid*

The Iranian Government is no exception to such a trend. According to Article 139 of the Constitution “*settlement of claims related to public and state property or referring such claims to arbitration in any case shall be subject to the Council of Ministers’ approval and must be notified to the Parliament. In cases where the other party of dispute is foreigner and in significant domestic issues the ratification of the Parliament is also mandatory. The law will ascertain significant issues.*”

Accordingly, as it is also envisaged in the draft of buyback contracts, the settlement of any disputes arising from the investment in the petroleum sector may be referred to arbitration. The problem arises when prior approval is required from the Council of Ministers and the Parliament for referral of a dispute to an arbitration tribunal. In practice, if a dispute arises between NIOC and an IOC, the latter may refer the case to arbitration while NIOC is seeking approval from the Parliament and Council of Ministers which in case of rejection may abort the dispute settlement process. Although referral of a dispute by IOCs against NIOC to an arbitral tribunal or a domestic court has rarely occurred, there are concerns that it may impose considerable risks upon foreign investors when negotiating and concluding investment deals with NIOC.

To improve dispute settlement and reduce the uncertainties over the practice of the Iranian Government in the case of a dispute, the Government adopted legislation on international arbitration known as ‘The Law on International Commercial Arbitration’ (LICA) in 1997. Although there are shortcomings in the provisions of the law, it closely follows the United Nations Commission on International Trade Law (UNCITRAL) Model Law on International Commercial Arbitration.<sup>414</sup> The Law provides for establishment of arbitral tribunal based on widely adopted international procedural codes.

In addition, FIPPA, though criticised for not taking a concrete stand in the vital issue of dispute resolution, has reaffirmed the possibility of recourse to arbitration if there exists a

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<sup>414</sup> Gharavi, H. "The 1997 Iranian International Commercial Arbitration Law: The UNCITRAL Model Law", *International Arbitration* 15, no. 1 (1999): 85, p.1

Bilateral Investment Treaties (BIT) between Iran and the investor's respective state. Article 19 of FIPPA provides *"If the disputes and differences, between the Government of Iran and foreign investors, arising out of mutual undertakings and liabilities within the limits of investments mentioned in the instant Law, shall not be settled amicably through negotiations, such disputes shall be examined by domestic courts of law, unless in the law concerning the mutual investment agreement to be entered into with the respective Government of foreign investor, a method other than the above for settlement of disputes shall be mentioned."*

Iran has signed more than 60 BITs during the last two decades, including with almost all European countries and respective states of the major IOCs.<sup>415</sup> Iran's BITs provide for settlement of disputes through arbitration, meaning that if a different method of dispute settlement is provided for in a BIT between Iran and the home country of the foreign investor, that method should be followed. The BITs that Iran has signed include a dispute settlement clause for arbitration under UNCITRAL Arbitration Rules or arbitration at the International Centre for the Settlement of Investment Disputes (ICSID). To further strengthen the country's international investment dispute mechanism, Iran joined the New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards (1958) in 2001,<sup>416</sup> guaranteeing recognition and enforcement of the awards in Iran and virtually all over the world.

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<sup>415</sup> As of 1<sup>st</sup> June 2012, Iran has concluded 62 Bilateral Investment Treaties with: Afghanistan ,Albania, Algeria, Armenia, Austria ,Azerbaijan ,Bahrain, Bangladesh ,Belarus ,Bosnia & Herzegovina ,Bulgaria ,China ,Croatia ,Cyprus ,Ethiopia ,Finland ,France ,Gambia ,Georgia ,Germany ,Greece ,Indonesia ,Italy ,Kazakhstan ,Kenya ,Korea, Democratic People's Republic, Korea Republic, Kuwait ,Kyrgyzstan Lebanon ,Libyan Arab Jamahiriya Macedonia, TFYR ,Malaysia ,Moldova Republic ,Morocco ,Oman ,Pakistan Philippines ,Poland ,Qatar ,Romania ,Serbia South Africa ,Spain ,Sri Lanka ,Sudan, Sweden ,Switzerland ,Syrian Arab Republic, Tajikistan ,Tunisia ,Turkey ,Turkmenistan ,Ukraine ,Uzbekistan, Venezuela ,Vietnam ,Yemen ,Zimbabwe; Total Number of Bilateral Investment Agreements Concluded." United Nations Conference on Trade and Development (UNCTAD), 1 June 2012.

<sup>416</sup> Iran's membership to the New York Convention was ratified in October 2001 and came into force in January 2001: <http://www.newyorkconvention.org/contracting-states/list-of-contracting-states>

#### 4.4.3. Other Regulations

**Registration and Operation of Foreign Firms in Iran-** As a result of Article 81 of the Constitution which strictly forbids “granting the concession on formation of companies and institutes to foreigners in the fields of commerce, industry, agriculture, mining and services”, there was a general perception that establishment of Iranian companies by foreigners, as well as the registration of branches and representative offices of foreign companies was impossible. The resulting uncertainty, made the then Prime Minister Rajai submitted an inquiry to the Council of Experts requesting a legal interpretation. The Council clarified that:

*"Foreign companies that have concluded legal contracts with Iranian Government organizations may register the branches of their companies in Iran according to Article 3 of the Act of Registration of Companies in order to carry out their legal obligations and conduct their businesses within the limits set forth in the contracts concluded by them and such registration shall not be in contravention of the provisions of the Islamic Republic of Iran Constitution."*<sup>417</sup>

The Government subsequently presented a bill to the Parliament for permitting registration of branches and representative offices of foreign companies, giving due consideration to ‘international trends’ and “the wish by foreign companies to operate in the Islamic Republic of Iran”.<sup>418</sup> As a result, the Parliament ratified the Law on Registration and Operation of Foreign Firms which was later approved by the Council of Experts in 1997.

In 2008, a new directive came into force allowing the Tehran Company Registration Bureau to register up to 100 percent foreign controlled companies in mainland Iran without any need to obtain a foreign investment license. Prior to the new directive, the

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<sup>417</sup> April 2, 1981, The Council Experts Archives

<sup>418</sup> "The Law on Registration of Branches and Representatives of Foreign Companies " In. (10 December 1997).

operation of foreign companies in Iran was only possible through a joint partnership with an Iranian entity and a maximum 49 percent share for the foreign partner.

**Patents, Industrial Designs and Trademarks-** IOCs' concern over protection of their technologies' patents in the process of technology transfer to Iran was addressed in 2008 by ratification of the Law on Registration of Patent, Industrial Designs and Trademarks. The law replaced the Trademarks and Patents Registration Act of 1932 and is considered the most important regulation with respect to protection of trademarks and industrial property rights in Iran. The law envisages a full protection of the IP rights and prohibits any unauthorised use of invention, trademark or industrial design by anyone other than the owner of the right. With regards to the trademarks, the exclusivity right also extends to use of marks that resemble the registered trademarks and could lead to public misleading or deception.<sup>419</sup> The law, however, envisages an exception to the exclusivity of the patents where the Government, "for the sake of national security, health, and *economy*" may seek to use a patented invention.<sup>420</sup> As the scope of such an exception is not clearly defined by the regulator, it can be considered a serious loophole in the law through which the Government can, based on its own interpretation of the national security and economic considerations, infringe an investor's right to a patent.

**Free Economic Zones-** the Law on the Administration of Free Trade Zones (FTZ) passed the Parliament in 1993, granting special rights to foreign investors in the FTZs. Iranian FTZs seek to attract capital investment through offering special economic incentives and facilities. Article 12 of the Law envisages exemptions for foreign investors from the requirements of the Labour Law, the payment of the social security and insurance premium, the issuance of residence and work permits and taxation of investment income. With the approval of the Board of Ministers, the importation of goods produced in the free zones to the mainland are also exempted from payment of all or part of customs duties and commercial profit tax. There are also special provisions which grant credit

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<sup>419</sup> Legal Newsletter: Atieh Associates, December 2008.

<sup>420</sup> *ibid*

guarantee and reassure repatriation of the investors' capital. The initiative was also followed up through setting up 'Special Economic Zones' to facilitate goods transit and improve supply and distribution networks in the country through granting the same special benefits, including exemption from levies and import export taxes.<sup>421</sup>

#### 4.5. Moving Forward

In most of the literature reviewed, extensive discussions have been presented urging the Iranian Government to adopt a more investor-friendly legal framework and abandon buyback contracts in favour of Production Sharing Agreements (PSAs).<sup>422</sup> Their argument is based on the transplantation of legal and contractual frameworks of those petroleum producing countries successful in substantial attraction of foreign investment, concluding that such an approach will certainly attract more investment to Iran's hydrocarbon sector, hence further development. But, a review of Iran's history of importing foreign countries' legal systems, for example, implementing French judicial system during Qajari dynasty, shows that legal transplantation has not been always successful in Iran.<sup>423</sup> Thus, prior to making such recommendations, attempts should be made to identify the role that law plays in a country's economic growth and to examine whether the legal transplant is an effective and efficient approach to implement reforms in a given country's legal system. This is particularly important in resource-rich countries like Iran where there are high expectations towards hydrocarbon sector for accelerating overall economic development.

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<sup>421</sup> Hakimian, H. "Iran's Free Trade and Special Economic Zones: Challenges and Opportunities", *Conference on Iranian Economy at a Crossroads: Domestic and Global Challenges*. University of Southern California, 18-19 September 2009

<sup>422</sup> For example in: Fesharaki, F., and. Varzi, M. "Investment Opportunities Starting to Open up in Iran's Petroleum Sector", 2000; Farnejad, H. 'Strategic Approach & Legal Implications of Investment in Geopolitically Sensitive Iran' University of Dundee, 2006; Amuzegar, J. 'Iranian Oil Buybacks: A Formula No One Likes', August 27 (2001); Brexendroff, A, et.al., 'The Iranian Buy-Back Approach', (2009)

<sup>423</sup> For a thorough study on the subject, see: Katouzian, H. *The Persians: Iranian History and Politics: The Dialectic of State and Society*. London: Routledge Curzon, 2003; Katouzian, H. *The Political Economy of Modern Iran: Despotism and Pseudo-Modernism (1926-1979)*. New York: New York University Press, 1981



#### 4.5.1. The Role of Law in Economic Development: Is the Legal Transplant the Solution?

The rule of law has long been proposed by some scholars as a solution to the world's challenges, including economic development.<sup>424</sup> Academic interest in the relationship between law and development has a long history, when for example in 18<sup>th</sup>, 19<sup>th</sup> and 20<sup>th</sup> centuries, scholars such as Montesquieu, Maine, and Weber extensively worked in various aspects of this relationship in the European context.<sup>425</sup> Moreover, since the 19<sup>th</sup> century scholars from developing countries have been deeply interested about the role that law could play in their countries' social and economic development, and rigorously started reviewing legal frameworks of western countries with the aim of importing such frameworks to legal system of their own countries.

Despite these early developments, the best known optimistic perspective on law and development emerged in the United States in the 1960s and early 1970s when an initiative, known as 'the law and development movement', commenced as a response to the post-World War II period. The movement "witnessed increase in the number of scholars and policymakers interested in the poor nations of the world", and how development of the rule of law could lead to their economic growth.<sup>426</sup> The theorists of the movement generally identified *traditional* political, social and cultural structures as main reasons behind a society's underdevelopments. They were advised that in order to advance, these societies would have to undergo the same process of evolution from traditionalism to modernity previously experienced by more developed societies.

In the period between the mid 1970s and the mid 1990s, American legal scholars turned their back on development studies after they lost faith in the ability of law to substantially

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<sup>424</sup> Carothers, T. *Promoting the rule of law abroad: in search of knowledge*, Carnegie Endowment for International Peace, University of Michigan, 2010; Tamanaha, B.Z. *On the Rule of Law: History, Politics, Theory*, Cambridge University Press, 2004

<sup>425</sup> Davis, K.E, and Trebilcock, M.J. "The relationship between law and development: Optimists versus Skeptics." Public law and Legal Theory Research Paper Series, Working Paper 08-14, New York University, May 2008

<sup>426</sup> *ibid*

contribute to economic development.<sup>427</sup> During this period economic development issues were reviewed and analysed as the proper domain of economists and political scientists. However, as the political and economic situation improved in the post-Cold War era and capitalist economies started growing at a rapid pace, both legal and economic academics and practitioners have become attuned to the potential economic functions of legal institutions. Their interests in the subject have led to a consensus that the overall “quality” of legal institution is an important determinant of development.<sup>428</sup>

The core theoretical insight linking law to economic development<sup>429</sup> stems from two distinct but closely related legal “institutions”, namely property rights and contracts and their effects on investment and trade development.<sup>430</sup> Protection of property rights is one of the most paradigmatic examples of growth-enhancing institutions. In simple words, the logic that links protection of property rights to economic development is that investors in new capital projects expect to have the required freedom to use and make profit from them. If investors believe that their capital may be expropriated or stolen, they will not make the investment in the first place; as North and Weingast put it, “the more likely it is that the sovereign will alter property rights for his or her own benefit, the lower the expected returns from investment and the lower in turn the incentive to invest.”<sup>431</sup> Comparative law and economic scholars argue that the more well-developed property

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<sup>427</sup> Davis, K.E. “What cant the rule of law variable tell us about rule of law reforms?.” Law and Economics Research Paper, No.04-026, New York University, 2004

<sup>428</sup> North, D.C. “Institutions, institutional change and economic performance, World Bank, World Development Paper, 1997

<sup>430</sup> Although there is a lack of literature on what precisely counts as an “institution, a general understanding is that “institution” refers to “the practices and organisations of public life- the societal, regional and local governance organisations; and the executive, legislative, and judicial organs of government.” Ulen, T.S. "The Role of Law in Economic Growth and Development." *Bonn Law & Economics Workshop* (April 2010); Douglass North has presented a different definition by saying, institutions are the “rules of the game”, and therefore include “any form of constraint that human beings devise to shape human interactions.” They include not just law but social norms, customs, and unwritten codes of conduct as well as formal and informal enforcement measures. North, D.C. and Weingast, B.R. "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeen-Century England." *The Journal of Economic History* 49, no. 4 (1989): 803-32

<sup>431</sup> North, D.C. and Weingast, B.R. "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England." 1989, p.803

rights and the more secure the enforceability of a contract are, the greater incentives individuals have to invest.

But, as “there is neither a standard energy policy nor a universal regulation model for all countries to follow”,<sup>432</sup> one may pose a question on the identification of the benchmark against which one can evaluate the effectiveness and investor-friendliness of a given legal system. An immediate answer is presented by many commentators on how to improve the Iranian legal system and that is through importing laws from ‘successful’ petroleum producing countries, particularly Qatar.<sup>433</sup> Such an approach may look convincing; however, an inherent risk that this approach embraces is that proposed legal changes derived from these grown out of local culture laws, although having the advantage of being tested already, may not take root when transplanted, due to influential historical, political, economic and cultural settings in which the importing state functions.<sup>434</sup> Kanda and Milhaupt give the example of the inclusion in the Japanese Commercial Code in 1950 of the “duty of loyalty”, taken directly from the United States for assuring good corporate governance: “For almost forty years after it was transplanted, the duty of loyalty was never separately applied by the Japanese courts, and played little role in Japanese corporate law and governance.”<sup>435</sup> Therefore, to ensure these legal changes would bring about the same development results, as they did in their original countries, they should be evaluated within the context of the importing country’s political, economic, historical and cultural environment.

In a new line of literature, developed by Cooter, the microeconomic foundations of the sources of the rules that allow the law and its enforcement mechanisms to adapt to a

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<sup>432</sup> Redgwell, C, et.al. "Energy Law in Europe: Comparison and Conclusions." In *Energy Law in Europe*, edited by Roggenkamp, Anita Ronne and Inigo del Guayo: Oxford University Press, 2001

<sup>433</sup> As there is intense competition between Iran and Qatar in maximising the production from South Pars joint field, there is a widespread notion among Iranian elites that in order to keep up the pace with Qatar, Iran should implement the same investor-friendly frameworks as Qatar in order to attract more capital for the development of its natural gas resources.

<sup>434</sup> Redgwell, C, et.al. "Energy Law in Europe: Comparison and Conclusions." In *Energy Law in Europe*, edited by Roggenkamp, Anita Ronne and Inigo del Guayo, 2001

<sup>435</sup> Kanda, H, and Milhaupt, C.J. “Re-examining legal transplants: The director’s fiduciary duty in Japanese Corporate Law.” *American Journal of Comparative Law* 51: 887-901, p.888

modern economy and, by adapting, foster economic growth is studied.<sup>436</sup> Cooter argues that efficiency and effectiveness are enhanced by a ‘bottom up’ process of capturing social norms that are already in place as ‘informally’ relevant in human interactions.<sup>437</sup> In the comparative law and economic literature, two methods of “up bottom” and “bottom up” lawmaking are introduced where the latter encourages the regulator to apply the norms of the community, whether derived from social, cultural or historical backgrounds, to its lawmaking decisions. Thus, in practical terms, any reform or improvements in the laws, regulations and enforcement mechanism of a country, should embed in itself the legal, cultural, historical and social traditions of each country in order to enable the enhancement of economic efficiency and improvement of equity.

Although legal reform and its role in promoting development has been supported by optimistic views, in the world of ideas such views have come under attack from a variety of directions. These attacks essentially challenge the assumption that law plays a significant causal role in development.<sup>438</sup> In a wider context, scholars argue that implementing reforms in the legal system of a country, for example in case of Iran, does not necessarily bring about desired developments. As an empirical study by Perry shows, in the context of international economic activities, such as foreign direct investments, although neo-institutional economic theory predicts that foreign investors will be attracted to states with “effective” (i.e. stable, accessible, predictable and clear) legal systems, “there is little empirical evidence to suggest that they are so attracted.”<sup>439</sup>

Here, a distinction should be made between substantive and institutional law. In his book, *The Law Growth Nexus*, Dam strongly rejects any correlation between substantive law and improvement of the rule of law and maintains that “no degree of improvement in

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<sup>436</sup> Cooter, R.D., ‘Decentralised Law for a Complex Economy: The Structural Approach to Adjudicating the New Law Merchant’, *University of Pennsylvania Law Review* 144, (1996): 164396

<sup>437</sup> *ibid*

<sup>438</sup> Davis, K.E. and Trebilcock, M.J. “The relationship between law and development: Optimists versus Skeptics.”, May 2008

<sup>439</sup> Perry, A. "Effective Legal Systems and Foreign Direct Investment: In Search of the Evidence." *International and Comparative Law Quarterly* 49, no. 783-799 (2000), p.784

substantial law-even world “best practice” substantial law- will bring the rule of law to a country that does not have effective enforcement.”<sup>440</sup> The late Prof. Thomas Wälde also argued that there is no evidence proving that a developed and effective legal framework can be considered a necessary condition neither for economic development nor for a growth in international investments.<sup>441</sup> He rejects the general assumption that very large investment projects, like those typical in oil and gas industry, would be carried out “on the basis of a developed, comprehensive, favourable and stable system of law.”<sup>442</sup> Wälde presents the Persian Gulf region as an example where the world’s most massive oil and gas investments have been carried out, “without any basis in a developed system of law, but mainly on the basis of legally problematic state-investor agreements.”<sup>443</sup> He continues even further and maintains that large investors are even less interested in the legal system as they have the skill, staying power and resources to implant themselves firmly in a host state setting; therefore, they rather “operate on the basis of their political-economic leverage than on the basis of law-and the restrictive tendencies often found in host state economic regulations.”<sup>444</sup> Therefore, there are other non-legal factors which exert their influence on the economic development of a country.

In the light of above, the over-estimated role that has been conferred to the law in development of the Iranian hydrocarbon sector should be carefully reassessed. In the area of foreign investment in the development of natural resources, policy would certainly play a stronger role and generate more pressure upon law. As Sir Elihu Lauterpacht puts it, “ scale, complexity and duration of the [oil and gas development] projects, coupled with the fact that they relate to a resource that is often a major, if not the major, element in the host country’s economic situation, means that mineral development is among the

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<sup>440</sup> Dam, K.W. *The Law Growth Nexus: The Rule of Law and Economic Development*: Washington D.C.: Brookings Institution Press, 2006, p. 93

<sup>441</sup> Wälde, T. W., "Law, Contract & Reputation in International Business: What World?" *CEPMLP Internal Journal* 3

<sup>442</sup> *ibid*

<sup>443</sup> *ibid*

<sup>444</sup> *ibid*

most sensitive target of Governmental or public concern.”<sup>445</sup> The role that the law plays is that it is interconnected to social, political, historical and economic factors, in a sense that the states’ choice of policy with regards to these factors will often be reflected in ‘positive law’;<sup>446</sup> hence, law is essential to materialise these policies, but not sufficient. For example, during Khatami presidency, his reformist Government adopted the policy of promotion of foreign investment, hence adopted the FIPPA provisions in order to materialise the policy.

Policy making in Iran is a challenging process. As explained in Chapter 3, politicisation and exertion of influence by multitude bodies of power, which is highly influenced by the history, has created serious confusion and uncertainty and made the country’s investment environment extremely unpredictable. In Iran, sceptical perceptions towards foreign investors have their roots in the country’s social and cultural norms, and are created and evolve by historical events. Therefore, unless changes are made in the decision makers and politicians’ perception towards foreign investors, any attempt to change in the legal system will be of little or no avail. In addition, the attraction and protection of foreign investors requires efficient and effective governance institutions which in Iran as a result of the syndrome of politicisation, such institutions have weakened and creating mismanagement and resulting corruption.

#### **4.5.2. The Role of Governance Institutions**

In a report published by the World Bank in 2012, Iran was ranked 150 out of 180 countries in protecting investors.<sup>447</sup> The report has taken into account criteria, such as property protection and contract enforcement, to evaluate the efficiency and effectiveness of the bureaucratic and institutional governance of the examined countries.

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<sup>445</sup> Lauterpacht, E. "Law and Policy in International Resource Development." *Journal of Energy & Natural Resources Law* 145, (1993): 145-54, p.146

<sup>446</sup> Ohnesorge, K.M. "Developing Development Theory: Law and Development Orthodoxies and the Northeast Asian Experience." *Journal of International Economic Law* 28, no. 2 (2007), p.226

<sup>447</sup> In the World Bank ranking Saudi Arabia, Oman, Iraq and the UAE are ranked 16, 100, 128 and 128, respectively. ‘Doing Business-Iran, Islamic Republic.’, The World Bank, 2012

The protection of property rights and the enforcement of contracts, as identified before as two major elements of economic development, are endogenous to underlying political bargains and institutions.<sup>448</sup> Governance institutions are identified by some scholars as a leading element in any country's investment climate. Jorgenson and Aysan and et al explain that as investment decisions are mainly driven by profitability motives,<sup>449</sup> and their forward looking nature,<sup>450</sup> 'good' governance institutions can reduce the uncertainty and promote the efficiency required for improving bureaucratic performances and predictability and ultimately the cost of doing business.<sup>451</sup>

In the majority of the resource-rich countries of the MENA region, including Iran, concerns and uncertainties related to the application of the rule of law as a result of discretionary power of the host state is more challenging than that of adopting a modern, investor-friendly legal framework. In the regulatory process what matters is the way the law works and not how it is formulated. The host state's governance structure, including the judiciary system, must be reasonably stable, transparent and predictable and as Ulen puts it, it should not be "corrupt".<sup>452</sup> The lack of an efficient administrative and judicial capacity in most of the resource-rich countries of the region has caused significant transaction costs and corruption, creating a negative atmosphere over secure and profitable trade and investment in these countries.<sup>453</sup> Corruption, widespread among these countries, weakens property rights, deprives investors of available compensation for risk-taking and increases uncertainty about potential investment payoffs, directly impacting incentive to invest and in turn dampening economic growth.<sup>454</sup> In 1995, Mauro, through

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<sup>448</sup> Haggard, S, et.al. "The Rule of Law and Economic Development", *The Annual Review of Political Science* (December 2007)

<sup>449</sup> Jorgenson, D. "Capital Theory and Investment Behavior." *American Economic Review* 53, no. 2 (1963): 247-59

<sup>450</sup> Aysan, A, et.al. , 'Governance Institutions and Private Investment: An Application of the Middle East and North Africa', *The Developing Economies* XLV, no. 3 (September 2007): 339-77, p.341

<sup>451</sup> *ibid*, p.341

<sup>452</sup> Ulen, T.S. "The Role of Law in Economic Growth and Development." April 2010

<sup>453</sup> Buscaglia, E., 'Law and Economics of Development', Hoover Institute, Stanford University, 1999, p.563

<sup>454</sup> Higbee, J, and Schmid, F.A. "Rule of Law and Economic Development." *International Economic Trends* (August 2004)

subjective indices based on surveys of investors, proved that higher corruption is associated with lower investment and growth.<sup>455</sup>

In addition, consistent and non-discriminatory application of law is a crucial factor in creating trust. Property rights and security of contract constitute a powerful disciplinary constraints on the behaviour of both the host state and investor, “but only when they are consistently enforced.”<sup>456</sup> A sound judiciary system is key to enforcement. The degree of judicial independence is correlated with economic growth. Better-performing courts have been shown to lead to more rapid growth of small firms as well as larger firms in the economy.<sup>457</sup> As Haggard and et al put it a vicious circle of enforcement inefficiency will, first of all, make the judicial system to be a dependable institution diminishing investors’ confidence; secondly, it will cause an increase in production costs by diverting resources into rent-seeking process; and finally and most importantly, it will introduce distortion that constitute various barriers to long-run growth including “monopolies, restriction on entry, protectionism, misallocation of Government spending and private expropriation of assets through managerial malfeasance.”<sup>458</sup>

The investment risks and uncertainties in Iran mostly stem from its weak, non-transparent and to a large extent corrupt governance institutions. Iran has a poor record in the just enforcement of contracts and fair protection of property rights which are of outmost importance to investors. Corruption and rent-seeking attitudes are widespread both in the judicial and administrative institutions particularly when dealing with the oil and gas-related matters where financial interests at stake are enormous.<sup>459</sup> Such weak and inefficient governance institutions will not certainly meet expectations of foreign investors in having the required level of protection. In other words, regardless of making

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<sup>455</sup> Mauro, P. "Corruption and Growth." *Quarterly Journal of Economics* 110, no. 3 (1995): 681-712

<sup>456</sup> Haggard, S, et.al. "The Rule of Law and Economic Development", December 2007, p207

<sup>457</sup> Dam, K.W. *The Law Growth Nexus: The Rule of Law and Economic Development*, 2006

<sup>458</sup> Haggard, S, et.al. "The Rule of Law and Economic Development", December 2007, p.211

<sup>459</sup> Transparency International, the international corruption watchdog, ranked Iran 133 amongst 176 countries in the index of the most corrupt countries; Corruption Perceptions Index 2012." *Transparency International*: <http://cpi.transparency.org/cpi2012/results/>, 2012



any reform in the country's regulatory and contractual regime, so long as stable and effective enforcement bodies do not exist in Iran, once should not expect substantial development in attraction of foreign investment in Iran.

#### **4.6. Final Remarks**

This Chapter reviewed Iran's legal and contractual framework for the development of its petroleum sector. It addressed the general presumption that had Iran adopted or transplanted the legal framework of 'successful' petroleum producing countries, it would have been in a better position to attract foreign capital and hence develop its natural resources. This Chapter, however, has challenged the validity of such general arguments. Some commentators' opinions regarding the urgent need for major changes in the Iranian petroleum contractual regime lack the historical, cultural and social context within which Iran adopted these particular legal and contractual frameworks. Prior to making such prescriptions, due regard should be given to the applicability of a legal framework outside the cultural context in which it has been developed, bearing in mind the economic and political implications of using such law outside the cultural and social environment in which it has grown. Comparative law and economics scholars, including Mattei and Monti, recommend "approaching such fundamental and critical [issues] within a broad historical context in which present trends are not taken for granted and in which local specificities are fully appreciated in their political meaning."<sup>460</sup>

Given Iran's prolonged scepticism towards the motivations of foreign investors and its concern about their influence over the country's natural resources, it is very unlikely that the Iranian Government would abandon the buyback contracts and adopt PSAs or any other form of traditional contract for foreign investment in the petroleum sector.<sup>461</sup> In addition, adopting other forms of contractual regimes would create severe judicial and

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<sup>460</sup>Mattei, U, and Monti, A. "Comparative Law and Economics: A European Perspective."

Societa italiana economia pubblica-Universita di Pavia, October 2003, p.18

Shiravi, A., and S.N. Ebrahimi. "Exploration and Development of Iran's Oilfields through Buyback.", 2006; *Energy Compass*, "Iran Rules out Production-Sharing Deals." July, (2004);

Otman, W.A. "The Iranian Petroleum Contracts: Past, Present and Future Perspectives."2007

political opposition in Iran. The Iranian courts, as a result of overwhelming and pre-assumed prejudice and a harsh stand against foreigners -- as explained in Chapter 3 -- are likely to retain full jurisdiction over any such contracts signed with foreigners particularly where there is concern or even speculation that these may allow the latter to exploit Iranian national wealth. Thus, any drastic change in the contractual regime for the development of the country's petroleum sector should be expected to face strong opposition from both the Parliament and the judicial system. Having said that, however, the fact that Iran does not want to, and will not, follow successful investment and contractual models for foreign investment in the petroleum sector (e.g. the Qatari model), due to its historical and cultural background, could mean that the country is depriving itself of investment and capital in its petroleum industry.

However, as the evolutionary trend of buyback contracts since their inception shows, there are promising prospects that the Iranian Government will modify terms or adopt more favourable clauses in order to reduce investment risks for IOCs. Such an approach is also in line with the fact that the petroleum industry has changed significantly and IOCs are no longer in a position to threaten Iran's sovereignty.<sup>462</sup>

Foreign investors, including IOCs, can also play an important role in improving conditions of investment in Iran. They must strengthen their understanding of the historical, cultural and social background of the country which is particularly important in case of Iran, having bitter experiences of foreign participation in its hydrocarbon sector. Therefore, in order to reach a win-win situation, both parties should understand their differences and make efforts to address their concerns.

In a broader spectrum, however, as long as Iran does not improve its governance institutions, and fails to offer confidence and certainty regarding the effective protection

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<sup>462</sup>Ghorban, N. The Need to Restructure Iran's Petroleum Industry (Revisited after Eight Years)", *Middle East Economic Survey* XXVIII, (2005)

of investors' rights and just enforcement of their contracts, one should not expect significant positive changes in Iran's foreign investment environment.

## 5. Chapter 5- Economic Challenges: Energy Subsidies and their Reform

### 5.1. Introduction<sup>463</sup>

As mentioned in Chapter 2, domestic consumption has had a remarkable growth rate in the last 30 years, reaching to 138bcm in 2011 (about 1400 percent increase).<sup>464</sup> Low energy prices charged nationwide, due to Government's subsidies, the requirement for natural gas reinjection to oilfields, population growth and industrial expansion are among some of the major reasons which make the country the 3<sup>rd</sup> largest gas consumer in the world only after the U.S. and Russia.<sup>465</sup> As we have seen in Chapter 2, except a relatively low export volume to Turkey which reached 8.4 bcm in 2011, almost all the gas produced in the country has been consumed domestically plus importing nearly 10bcm/yr from Turkmenistan to fill the domestic gas supply deficit.

Iran, like most of the oil-exporting countries, has a long history of subsidising the consumption of petroleum products. In 2010, the IEA reported that Iran had the highest share of fossil fuel consumption subsidies in the world, amounting to nearly US\$80 billion, almost equivalent to 23 percent of the country's GDP.<sup>466</sup> Although political and social considerations, including public support and concerns over the disadvantaged groups, are usually put forward as reasons for subsidising energy consumption, subsidies are economically very costly and rarely serve the interest of the targeted groups.<sup>467</sup>

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<sup>463</sup> A summary of this Chapter is published by the author at the Global Subsidies Initiative (GSI) of the International Institute for Sustainable Development (IISD), Geneva, Switzerland: [http://www.iisd.org/gsi/sites/default/files/pb14\\_iran.pdf](http://www.iisd.org/gsi/sites/default/files/pb14_iran.pdf)

Also a conference speech on the topic was given at the *Deutsche Gesellschaft für Internationale Zusammenarbeit (German Organisation for International Cooperation) (GIZ)* during GIZ 'Smart Fuel Price Regulation' Conference in Eschborn, Germany on 8-9 November 2012

<sup>464</sup> In the period between 1970 and 1979, Iran's average natural gas consumption reached around 10 bcm/yr. After the revolution, in the first five year, the rate of natural gas consumption dropped significantly reaching to its lowest, i.e. 5.7bcm in 1981; British Petroleum, 'British Petroleum Statistical Review of World Energy', 2003; "Iran's Energy Balance, 1968-2009"

<sup>465</sup> British Petroleum, 'British Petroleum Statistical Review of World Energy', 2012

<sup>466</sup> "Economic Cost of Fossil-Fuel Subsidies", the IEA Subsidies Report, 2010

<sup>467</sup> "Economic Analysis Division, 'Carrots and Sticks: Taxing and Subsidising Energy', International Energy Agency, 2006

Subsidies have also had adverse impact on development of the natural gas sector; they not only encourage extensive and wasteful consumption of natural gas but also deter investment in the gas resources that are intended to supply domestic markets. The burden of losing profit through subsidising domestic consumption is weighting on the Government's budget and the ability of NIOC to invest and develop the upstream sector. Moreover, very low domestic gas prices cause bias among the politicians in favour of export markets, undermining the economic and political benefits of prioritising the allocation of gas to the most economically beneficial enduse, be it domestic or international markets or potentially both.

This Chapter aims to analyse the role of the Iranian subsidised natural gas market on development of the gas sector. It particularly addresses the energy subsidies reform process in Iran and tries to shed some light on the reform's degree of success and its impact on development of the natural gas industry. The Chapter starts with a general overview of energy subsidies, their political and economic objectives and the justification for their reform. It continues with a brief review of the energy subsidies in Iran, including the history of subsidies and pricing mechanisms. In the last part, the Chapter elaborates on the recent energy reform plan and the impact of the reform on both the country's overall economic status and development of its natural gas industry.

## **5.2. An Overview of Energy Subsidies**

This section aims to provide a general background to energy subsidies and tries to set the stage for a more elaborate study of the Iranian energy subsidies. It therefore proceeds by reviewing the definition of energy subsidies presented by various stakeholders and then describes the Governments' political and economic objectives for adopting the subsidisation policy. The section ends with enumerating the critiques to energy subsidies and reviewing the justifications for their reform.

### 5.2.1. Definition of Energy Subsidies

There is no universally agreed definition of subsidies,<sup>468</sup> as the concept is described as ‘too elusive’ to define.<sup>469</sup> In simple terms, De Moor and Calamai define subsidies as “*any measure that keeps prices for consumers below the market level or keeps prices for producers above the market level or that reduces costs for consumers and producers by giving direct or indirect support.*”<sup>470</sup> According to Fattouh and El-Katiri, this definition

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<sup>468</sup> Oxford English Dictionary defines subsidies as:

- a sum of money granted by the state or a public body to help an industry or business keep the price of a commodity or service low;
- a sum of money granted to support an undertaking held to be in the public interest;
- a grant or contribution of money;
- a Parliamentary grant to the sovereign for state needs.
- a tax levied on a particular occasion.

“Oxford English Dictionary”, Oxford University Press, 2010.

Subsidies may fit in various categories depending on their:

- Beneficiaries: consumers or producers subsidies;
- Transparency (inclusion in the budget): implicit or explicit subsidies;
- Market: energy, food and etc;
- Payment methods.

According to joint report prepared by OPEC, IEA, OECD and the World Bank, a consumer subsidy applies to reduce the consumer price of a good or service below what it would be in the absence of the subsidy and a producer subsidy increases the price received by a producer above its market level. ‘Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative’, *Prepared for Submission to the G-20 Meeting*, OPEC, IEA, OECD, World Bank Joint Report. Toronto (Canada), June 2010, pp.5-6

Explicit price subsidies are considered those subsidies that are recorded in the government budget as expenditures, although not necessarily under the category “subsidies”. On the contrary, implicit price subsidies “are not easily identifiable in the government budget, but can show up as (1) losses of the banking system (e.g., owing to below-market interest rates or directed credits); (2) losses of state-owned enterprises, owing to setting prices below cost recovery levels; (3) differential tariffs for various consumers (e.g., by charging industrial users a higher tariff for electricity and water); (4) tax expenditures (e.g., tax exemptions, concessions, and deferrals); (5) below-market procurement prices, which act as a tax on producers and a subsidy for consumers; (6) equity participation in state-owned enterprises without an expectation of a market return or net lending to them at preferential interest rates; (7) regulations that alter market prices or restrict market access (regulatory subsidies); and (8) distribution of donor-provided commodities at below-market prices.”

In addition, depending on the method of payment, subsidies can include direct payments to consumers and producers (cash subsidies), granting loans to enterprises at low interest rates (credit subsidies), reduction in specific tax liabilities (tax subsidies), government purchase of goods and services at above market price (procurement subsidies) and provision of goods and services at below market price (in-kind subsidies); “The Scope of Fossil-Fuel Subsidies in 2009 and a Roadmap for Phasing out Fossil-Fuel Subsidies.” In *An IEA, OECD and World Bank Joint Report Prepared for the G-20 Summit*. Seoul (Republic of Korea), November 2010.

<sup>469</sup> Clements, B, et.al., ‘Government Subsidies: Concepts, International Trends and Reform Options’, Washington DC: International Monetary Fund, September 1995

<sup>470</sup> de Moor, A, and Calamai, P., ‘Subsidizing Unsustainable Development: Undermining the Earth with Public Funds’, edited by Institute for Research on Public Expenditure: Earth Council, 1997, p.53

which underlies the price-gap approach,<sup>471</sup> “remains the most commonly used method for calculating subsidies due to its simplicity.”<sup>472</sup> However, as the price-gap approach compares the actual price of a good or a service against a benchmark or reference price, reaching a universal agreement among international organisations over the choice of the reference price and consequently “a commonly agreed definition of subsidies has proven a major challenge in the G-20 context and countries have decided to adopt their own definition of energy subsidies.”<sup>473</sup>

In a general context, the IEA defines an energy subsidy as “*any Government action directed primarily at the energy sector that lowers the cost of energy production, raises the price received by energy producers or lowers the price paid by energy consumers.*”<sup>474</sup>

The IEA’s definition like other similar organisations, such as the World Bank’s approach towards subsidy estimation, is interpreted as a benchmark for evaluating the scale of subsidies based on differences between international and domestic markets prices.<sup>475</sup>

However, such approach, has been criticised by OPEC, arguing that in energy resource well-endowed countries, the benchmark price to be used should be ‘the cost of production’,<sup>476</sup> meaning that any Government action which decreases the consumers’ prices lower than the cost of production should be considered as subsidy.

The WTO Agreement on Subsidies and Countervailing Measures (ASCM) also provides a subsidy definition which is clearly based on a ‘production cost’ benchmark. Article 1 of

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<sup>471</sup> For a given product, the price gap is the difference between a reference price and the actual retail (end-use) price. For net exporting countries, ‘reference prices were based on the export parity price’, meaning the price of a product at the nearest international hub minus transportation, tax, and insurance costs. The Scope of Fossil-Fuel Subsidies in 2009 and a Roadmap for Phasing out Fossil-Fuel Subsidies." In *An IEA, OECD and World Bank Joint Report Prepared for the G-20 Summit*. Seoul (Republic of Korea), November 2010., p. 16

<sup>472</sup> Fattouh, B, and El-Katiri, L. "Energy and Arab Economic Development", *Arab Human Development Report: United Nations Development Programme*, 2013, p.11

<sup>473</sup> "Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative," In. (June 2010) *Prepared for Submission to the G-20 Meeting*, edited by O. IEA, OECD, World Bank Joint Report. Toronto (Canada)

<sup>474</sup> "IEA Analysis of Fossil-Fuel Subsidies." In *World Energy Outlook*. Paris: International Energy Agency, October 2010, p.509

<sup>475</sup> Fattouh, B, and El-Katiri, L. "Energy and Arab Economic Development", *Arab Human Development Report*, 2013.p. 11

<sup>476</sup> "Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative," *Prepared for Submission to the G-20 Meeting*, June 2010

the Agreement stipulates that a “subsidy” exists when there is a “financial contribution” by a member state or public body that confers a “benefit”.<sup>477</sup> According to Article 1 of ASCM, a ‘benefit’ is granted when the ‘financial contribution’ is provided to “a recipient on terms that are more favorable than those that the recipient could have obtained from the market.”<sup>478</sup> There is, however, an argument that based on the WTO definition of subsidies, as long as the consumers price is not below production costs, then it is difficult “to justify that a benefit had been conferred to domestic producers.”<sup>479</sup>

Fattouh and El-Katiri argue that based on standard economic theory, “the most appropriate benchmark by which to compare domestic prices is the *marginal cost* which refers to the increment in total cost that results from a unit change in output.”<sup>480</sup> *Marginal cost* alongside with the *depletion premium* constitutes the price for the “economic cost” of energy. In case of Iran, for example, where there is “gas surplus” and the gas reserves are expected to support the projected production for a long time, “the depletion premium becomes negligible and the gas price is close to the lower end of the range, i.e., the cost of supply.”<sup>481</sup>

Given the existence of various benchmarks, in this study subsidies are defined as any Government’s measures which lower the prices of domestically consumed energy below its production cost; in other words, *marginal cost* benchmark is adopted to compare the prices of energy sold to domestic consumers with the cost of energy production throughout its entire supply chain; i.e. the investment and operating expenses,

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<sup>477</sup> According to Article 1 of ASCM, a “financial contribution” arises where:

- a government practice involves a direct transfer of funds (e.g. grants, loans, and equity infusion), potential direct transfers of funds or liabilities (e.g. loan guarantees);
- a government revenue that is otherwise due is foregone or not collected (e.g. fiscal incentives such as tax credits);
- a government provides goods or services other than general infrastructure, or purchases goods; or
- a government entrusts or directs a private body to carry out one or more of the above functions.

<sup>478</sup> “Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative.” In *Prepared for Submission to the G-20 Meeting*, edited by OPEC IEA, OECD, World Bank Joint Report. Toronto (Canada), June 2, p.8

<sup>479</sup> Dargin, Justin. “The Gulf Natural Gas Dual Pricing Regime: WTO Rules and Economic Growth in the Gulf.” Dubai Initiative Working Paper, 2010

<sup>480</sup> Fattouh, B, and El-Katiri, L. “Energy and Arab Economic Development”, *Arab Human Development Report*, 2013, p. 10

<sup>481</sup> Razavi, H. “Natural Gas Pricing in Countries of the Middle East and North Africa.” *The Energy Journal* 30, no. 3 (2009): 1-22. p.2



transmission and distribution costs in order to determine the amount of conferred subsidies. As explained above, the forces for integration of domestic and international markets prices are stronger in importing countries where subsidisation of imports for domestic market inflicts heavy pressure on Governments' budget.<sup>482</sup> However such a price reference method has major limitations when dealing with the natural gas pricing in resource rich countries, like Iran. As mentioned above, energy experts at OPEC, are of the opinion that the reference price in such countries should be "based on their cost of production, rather than prices on international market."<sup>483</sup> This is mostly due to the fact that these countries use their resources to accelerate their general economic growth and that such an "approach more than offsets the notional loss of value by selling the resource internally at a price below the international price."<sup>484</sup> Moreover, in such countries, natural gas is extensively used as a substitute for oil which can be more easily exported in larger quantities; thus, a more logical price comparison would be between export prices for gas and export prices for oil.<sup>485</sup>

### **5.2.2. The Political and Economic Objectives of Energy Subsidies**

Iran like many other major energy producing countries in the MENA region has been extensively subsidising fossil fuel consumption. As noted in Chapter 2, natural gas consumption has particularly had a rapid growth in the country's domestic market as a result of upward economic growth, expansion of population, increase of gas utilisation in power generation as well as industrial diversification and development of energy-

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<sup>482</sup> Allsopp, C, and Stern. J., "The Future of Gas: What Are the Analytical Issues Relating to Pricing?", In *The Price of Internationally Traded Gas*, edited by Jonathan Stern. Oxford: Oxford University Press, 2012. p.31

<sup>483</sup> "Joint report by IEA, OPEC, OECD and World Bank on fossil-fuel and other energy subsidies: An update of the G20 Pittsburgh and Toronto Commitments," In. (2011). p. 16

<sup>484</sup> "The Scope of Fossil-Fuel Subsidies in 2009 and a Roadmap for Phasing out Fossil-Fuel Subsidies." *An IEA, OECD and World Bank Joint Report Prepared for the G-20 Summit*. Seoul (Republic of Korea), November 2010, p.16

<sup>485</sup> Darbouche, H, and Mabro. R. "Egypt's Natural Gas Market: So Far So Good, but Where to Next?" In *Natural Gas Markets in the Middle East and North Africa*, edited by Bassam Fattouh and Jonathan Stern. Oxford: Oxford University Press, 2011

intensive industries.<sup>486</sup> Therefore, the objectives of subsidies vary, depending on social, economic and political considerations which encourage their implementation in a market economy.

In social terms, energy subsidies are often used to alleviate energy poverty, promote economic development and create jobs by providing access to affordable energy services which ultimately result in enhancement of social welfare protection (social equity).<sup>487</sup> Subsidies are implemented as a method to protect the income of citizens, specially the vulnerable and the poor, from high fuel costs. Alternatively, Governments may provide subsidies to producers in order to reduce their production costs so the producers will then pass these lower costs on to end users by offering cheap consumer goods.<sup>488</sup>

Subsidies may be used to improve access to modern forms of energy such as electricity. They can accelerate the expansion of necessary infrastructure, such as electricity grids into rural and remote areas, through direct producer subsidies that encourage investment in new infrastructure, or through consumer subsidies that reduce the cost of initial household connections to grids.<sup>489</sup>

In industrial and production sectors, energy subsidies are put in place to support the development of industries and to boost employment. Energy intensive industries, such as cement, fertilisers and petrochemicals, are most likely to benefit from subsidies, as they cover a major portion of their intermediate cost. The rationale behind supply of cheap feedstock to such industries is to enable them to supply goods and services to consumers at affordable prices; to protect local industries against foreign competition; to increase their export competitiveness; and to enhance local employment.<sup>490</sup> This is particularly important in case of Iran, as the country like many other petroleum-rich countries in the

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<sup>486</sup> Fattouh, B, and Stern. J. "Introduction." In *Natural Gas Markets in the Middle East and North Africa*, edited by Bassam Fattouh and Jonathan Stern: Oxford University Press, 2011

<sup>487</sup> *ibid*

<sup>488</sup> Fattouh, B, and El-Katiri, L. "Energy and Arab Economic Development", *Arab Human Development Report*, 2013, p.12

<sup>489</sup> *ibid*

<sup>490</sup> *ibid*

region, is economically dependent on its hydrocarbon sector. The vulnerabilities, resulting from its exposure to the volatile international oil markets and its ‘rent-based political economy’, have forced the country to adopt economic diversification policy as a part of its larger development policies.<sup>491</sup> Hence, providing domestically available raw materials, such as oil and natural gas at low prices are considered as a comparative advantage for leveraging economic growth.<sup>492</sup>

Subsidies have also been used to offset temporary commodity price volatility by controlling energy prices. Subsidising domestic energy prices when prices in international markets are high “can smooth consumption in the face of highly volatile prices.”<sup>493</sup> Additionally, higher energy prices, where the nominal wages respond to increases in living costs, can stimulate inflation, posing concerns in Governments which already encounter inflationary pressures.<sup>494</sup> Therefore, having subsidies in place, inflationary pressures can be to a large extent avoided.

From a political point of view, the cheapest fuels are mostly provided by Governments that do not face “popular referenda”, a political move which is called “populist paradox”, by David Victor.<sup>495</sup> Concerns over public unrest and instability, such as those seen across Arab world in 2011, have made these Governments to provide highly visible services at low costs to reduce political risks.<sup>496</sup> Therefore, for them, artificially low prices are considered a rent distribution mechanism as a result of which “they voluntarily relinquish

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<sup>491</sup> Darbouche, H. "The Pricing of Internationally-Traded Gas in Mena and Sub-Saharan Africa" In *The Pricing of Internationally Traded Gas*, edited by Jonathan Stern. Oxford: Oxford University Press, 2012

<sup>492</sup> *ibid*

<sup>493</sup> Fattouh, B, and El-Katiri, L. "Energy and Arab Economic Development", *Arab Human Development Report*, 2013, p.15

<sup>494</sup> *ibid*, p. 15

<sup>495</sup> Victor, D. "The Politics of Fossil-Fuel Subsidies." *Untold Billions: Fossil-fuel subsidies, their impacts and the path to reform*. Geneva: The Global Subsidies Initiative (GSI) of International Institute for Sustainable Development (IISD), October 2009

<sup>496</sup> *ibid*

the potential rent they would receive from gas exports at higher international prices, in favour of public and private-owned industries and household.”<sup>497</sup>

### 5.2.3. Critiques of Energy Subsidies and Justifications for their Reform

According to the IEA, subsidies that artificially reduce consumers’ prices for fossil fuels amounted to US\$409 billion in 2010.<sup>498</sup> Fossil-fuel subsidies, despite their initial designated objectives (see Section 5.2.2), “have proven to be an inefficient means of fulfilling those objectives, instead creating market distortions that encourage wasteful consumption and can lead to unintended negative consequences.”<sup>499</sup> The subsidisation policy was less distorting in a low-oil price environment when prices were relatively stable and close to production costs. Rising prices of oil since the mid 2008 placed an onerous burden on Governments’ budget, making funding of subsidies insupportable to many countries, including both importing and exporting countries.<sup>500</sup> In the case of Iran, further erosion of domestic energy prices vis-à-vis their international benchmarks happened in the light of rising domestic rates of inflation and subsequent exchange rate depreciations.<sup>501</sup> The situation became even more challenging as the country has been

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<sup>497</sup> Darbouche, H. "The Pricing of Internationally-Traded Gas in Mena and Sub-Saharan Africa" In *The Pricing of Internationally Traded Gas*, 2012, p. 8

<sup>498</sup> "The IEA Analysis of Fossil-Fuel Subsidies. "In *World Energy Outlook*. Paris: International Energy Agency, October 2011. IEA’s estimate for energy subsidies is based on price-gap approach that compares domestic prices to international prices; meaning that by change of prices in international markets, the amount of subsidies will change. For example, in 2008, when the oil prices reached around US\$120 bbl, the aggregate cost of fossil-fuel subsidies was estimated at around US\$550 billion, whereas in 2009 as a result of sharp drop in oil prices the world subsidies cost was reported around US\$300 billion. In addition to this methodological complication, the IEA data is also not immune to shortcomings. According to Fattouh and El-Katiri, the most immediate concern over the IEA’s estimation of the fossil-fuel subsidies is the absence of data for particular types of fuels which despite their sizeable subsidies, the rate of their subsidisation equals zero. Fattouh, B, and El-Katiri, L. "Energy and Arab Economic Development", *Arab Human Development Report*, 2013, p.13

<sup>499</sup> *ibid*

<sup>500</sup> Although exporting countries are expected to gain excessive cash as a result of rising petroleum prices, in most cases due to their limited refinery capacity, a large portion of the revenue is usually spent for import of refined petroleum products.

<sup>501</sup> Guillaume, D, et.al. "Iran: The Chronicles of the Subsidy Reform", International Monetary Fund, 2011, p.5

facing increasingly heavy sanctions, restricting the country's access to financial resources (see Section 3.4.2).<sup>502</sup>

**Wasteful and inefficient consumption-** cheap energy prices cause wasteful consumption mostly in the residential and commercial sectors as there are no incentives or pressure for efficient consumption of energy. Low prices also leave the industrial sectors with relatively no incentive to upgrade their old and inefficient capital stock with state-of-art technologies. In Iran, for example, gas-fired plants produce 3kWh of electricity for each standard cubic meter of gas, which comparing to international standards, a relatively large portion of the allocated gas is wasted.<sup>503</sup>

**Mistargeting-** the major leakage of subsidies' benefits to the top income groups of countries proves that "universal fuel subsidies are an extremely costly approach to protecting the welfare of poor households."<sup>504</sup> According to the Independent Evaluation Group (IEG) of the World Bank, the bottom 40 percent of the population in terms of income distribution receives only 15-20 percent of the fuel subsidies in developing countries.<sup>505</sup> This would clearly make the lower income groups incur substantial welfare loss as their low initial consumption level would not absorb low energy prices to the same extent as high-income households.

**Threats to investment-** fossil-fuel subsidies have an adverse impact on investment resources for development of energy infrastructure. In a subsidised energy market, investors are usually required to sell a portion of the gas at low prices to domestic markets which would substantially reduce the return on their investment. Hence, in the

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<sup>502</sup> See Chapter 3.

<sup>503</sup> Adibi, S, and Fesharaki, F. "The Iranian Gas Industry" In *Natural Gas Markets in the Middle East and North Africa*, 2011.p. 287; according to IEA, the amount of fuel used to generate electricity depends on the efficiency of the generator and the heat content of the fuel. Based on the IEA formula, in standard conditions, 0.28 cubic meter of gas usually generates 1kWh: <http://www.eia.gov/tools/faqs/faq.cfm?id=667&t=2>

<sup>504</sup> Granado, J, et.al. "The Unequal Benefits of Fuel Subsidies: A Review of Evidence for Developing Countries" In *IMF Working Paper*. Washington: International Monetary Fund, 2010, p.13

<sup>505</sup> "Social Safety Nets: An Evaluation of World Bank Support 2000-2010." edited by Independent Evaluation Group (IEG). Washington D.C: The World Bank, 2011

absence of offsetting compensation payments to companies, fossil-fuel consumption subsidies reduce energy companies' revenues, minimising their incentive for investment.<sup>506</sup> In 2005, the IEA reported that "cheap gas prices in the Middle East and North Africa is considered as the main reason for lack of success in development of gas projects in the region",<sup>507</sup> causing lack of interests for capital investments.<sup>508</sup> Valerie Marcel also argues that "to attract foreign investment, the first important step is to deregulate and eliminate the subsidised domestic energy market and to release more capital for investment in petroleum industry to enhance production."<sup>509</sup> Thus, the more subsidies for petroleum products the less money is available for capital investment for further development of the industry.

**Energy export capacity-** the inefficient use of energy resulting from low prices hastens resource depletion and reduces the amount of energy available for export.<sup>510</sup> Subsidies may even cause reduction of oil export capacity, directly affecting states' vital source of revenue and indirectly jeopardising global energy security. In addition, low regulated prices and artificially high demand have made a few major oil exporting countries to rely on imports of refined petroleum products, or in case of Iran, on imports of natural gas. In countries with natural gas export commitments, domestic gas shortages resulting from cheap prices, may force Governments to respond by curtailing or cutting-off exports (as has been the case in Iran-Turkey gas export deal). Taking such steps and defaulting on delivery obligations may inflict serious long-term costs for a gas exporting country, most importantly reputational damage.

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<sup>506</sup>Fattouh, B, and El-Katiri, L. "Energy and Arab Economic Development", *Arab Human Development Report*, 2013. p.17

<sup>507</sup>According to the IEA, MENA countries have the most subsidised markets in the world. "World Energy Outlook: Middle East and North Africa Insights," (Paris: International Energy Agency, 2005). Also read "Betwixt petro-dollars and subsidies " In. (2008) *Surging energy consumption in the Middle East and North Africa States*: International Energy Agency.

<sup>508</sup> Marcel, V., *Oil Titans: National Oil Companies in the Middle East*, 2006

<sup>509</sup> Ibid, p. 152

<sup>510</sup>Laan, T. "The High Cost of Cheap Energy: Russia's Fossil-Fuel Subsidies Undermine Sustainable Development." In *Bridges Trade BioRes*: International Centre for Trade and Sustainable Development 11 July 2011., p.7

**Distortion of price signals-** energy subsidies distort price signals, and by doing so, they distort the allocation of energy resources and may lead to “wasteful consumption and investment choices that do not reflect relative scarcities.”<sup>511</sup> Clements et al argue that less distorted output prices will reduce deadweight losses in resource use, further boosting growth.<sup>512</sup>

**Environmental challenges-** for many years subsidised fossil fuel consumption has been considered as an underlying cause of environmental problems, such as air pollution. In 2006, the Energy-Environment Review (EER) estimated that only in Iran “without price reform and policy intervention, environmental damages cost would grow to US\$12 billion, or 6.6 percent of nominal GDP, by 2019.”<sup>513</sup> Thus, phasing out subsidies of polluting substances would create incentives for conservation of energy, moderate increase of demand and most importantly encourage investment in energy efficient capital stock and development of renewable sources of energy.<sup>514</sup>

**Fuel smuggling-** low energy prices also encourage fuel adulteration and smuggling across borders to neighbouring countries with higher fuel prices, which consequently promotes black market activities and corruption.<sup>515</sup>

### 5.3. A Background to Iran’s Natural Gas Subsidies

Low prices combined with delays in projects have caused a chronic shortage of natural gas to meet Iran’s domestic and international gas supply commitments.<sup>516</sup> According to

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<sup>511</sup> Baig, T, et.al. "Domestic Petroleum Product Prices and Subsidies: Recent Developments and Reform Strategies." Washington D.C.: The World Bank - Fiscal Affairs Department, March 2007

<sup>512</sup> Clements, B, et.al. "Real and Distributive Effects of Petroleum Price Liberalization: The Case of Indonesia." *The Developing Economies* XLV, no. 2 (June 2007): 220-37..p235

<sup>513</sup> Kobayashi, H, et.al. "Mainstreaming Environment in the Energy Sector- the Case of the Energy-Environment Review for Iran." Washington D.C: The World Bank, December 2006.

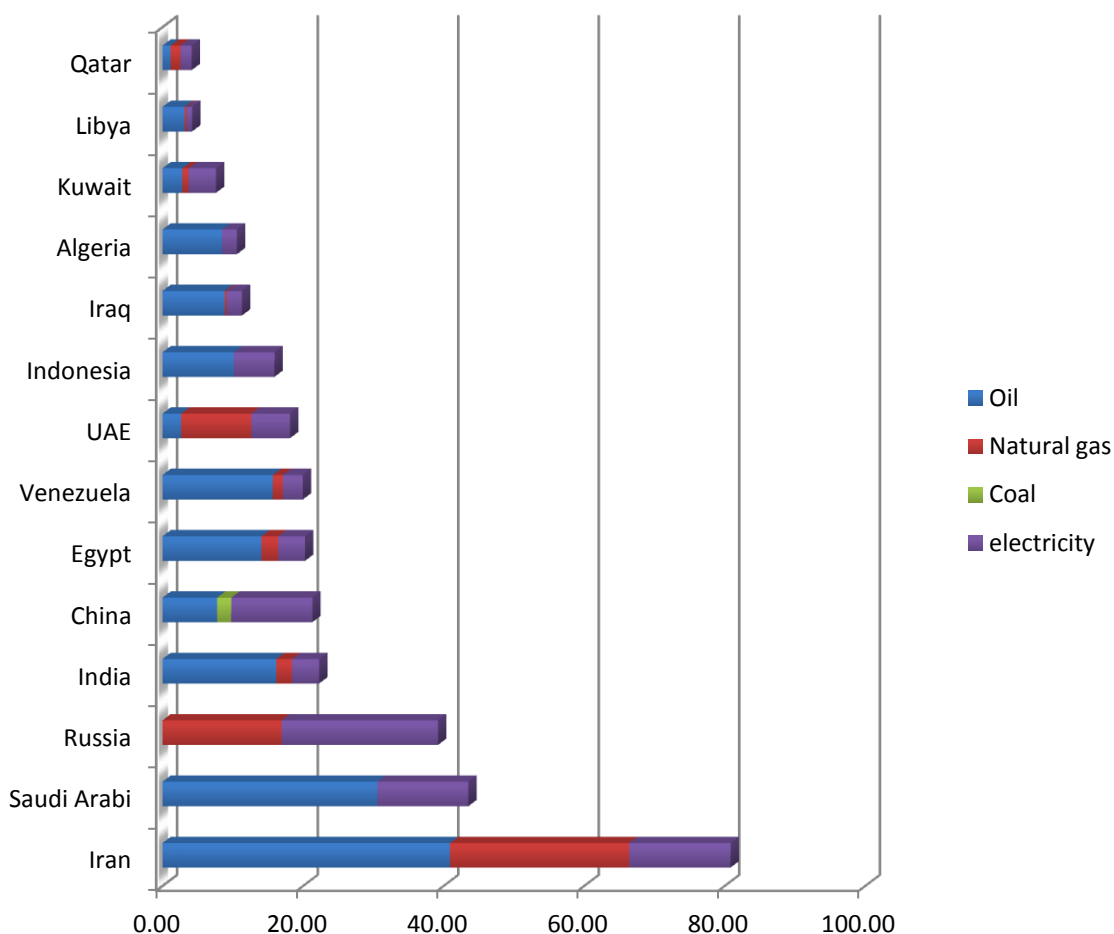
<sup>514</sup> "Islamic Republic of Iran Environment Strategy Study." edited by Natural Resources & Environment Division, Maghreb and Iran Department and Middle East and North Africa Region. Washington D.C: The World Bank, May 1995., pp.58-59

<sup>515</sup> Granado, J, et.al. "The Unequal Benefits of Fuel Subsidies: A Review of Evidence for Developing Countries," In *IMF Working Paper*. Washington: International Monetary Fund, 2010, p.14

<sup>516</sup> Adibi, S, and Fesharaki, F. "The Iranian Gas Industry" In *Natural Gas Markets in the Middle East and North Africa*, 2011, p.286

the IEA, just for 2010, energy consumption subsidies cost the Iranian Government US\$80 billion, of which around US\$30 billion was the share of natural gas.<sup>517</sup>

**Figure 5.1- Economic Cost of Fossil-Fuel Consumption Subsidies (2010)**



Source: IEA (2010)

**Table 5-1- Share of Energy Subsidies in Selected Countries' Natural Gas and the GDP (2010)**

	Total energy subsidies (US\$ billions)	Share of gas (percent)	Total subsidies as percent of GDP	Fiscal balance as percent of GDP
Algeria	10.6	--	6.6	-1.1
Libya	4.2	6.2	5.7	8.7
Egypt	20.3	11.8	9.3	-8.1

<sup>517</sup> See footnote 497 for the IEA's problematic methodology.



<b>Saudi Arabia</b>	43.5	--	9.8	6.7
<b>Qatar</b>	4.2	34	3.2	2.9
<b>UAE</b>	18.2	54.9	6	-1.1
<b>Iraq</b>	11.3	2.5	13.8	-9.1
<b>Kuwait</b>	7.6	11.8	5.8	22.6
<b>Iran</b>	80.8	31.6	22.6	1.7
<b>Nigeria</b>	2.9	--	1.3	-8.5
<b>Angola</b>	1.1	--	1.3	7.7

**Source: IEA & IMF, cited in Darbouche (2012)**

A historical study of subsidies in Iran shows that, although they were initially introduced as an economic tool to support the poor and enhance social welfare, the Government later on faced major challenges as the result of their onerous economic and fiscal impact on its budget and overall economic development.

### **5.3.1. A Short History of Subsidies in Iran**

In Iran, subsidies have been considered an important means to protect the nation from domestic and international economic instabilities. Subsidies were in place as late as Safavi and Qajar dynasties, i.e. more than four centuries ago, when the ruling powers indirectly subsidised the food market by offering tax exemption or supplying free seeds to farmers.<sup>518</sup> The first precedent of the Government's direct intervention in the supply and demand trend of the food market goes back to 1932 when, following the enactment of a law, the Government, in order to combat famine, committed itself to buy cultivated wheat and store it in silos.<sup>519</sup> Therefore, for many years, the Government tended to offer financial aid to the agricultural sector through either purchasing products at higher prices, if supply exceeded demand, or selling them cheaper to consumers in the event of surplus.

Subsidisation, based on its current definition, was first introduced to Iran's economy in the post World War II era, when the Government initiated subsidisation of energy and

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<sup>518</sup> Molai, E. "Tarikhcheye Pardakhte Yaraneh Dar Eghtesad Iran (History of Subsidies in Iran's Economy)." *Resalat Eghtesadi*, November 2004

<sup>519</sup> *ibid*,

stable foods consumption. By 1970s, the aggregate amount of subsidies that the Government paid for essential commodities was around IRR1668 million (equivalent to US\$250 million).<sup>520</sup> After the first oil price shock in 1975, the Government for the first time felt the heavy burden of the subsidies in the light of rising oil prices and continuously growing expectations of the population for rising living standards.

After the Revolution, the Iranian Government, as a part of its 'revolutionary social compact', further developed the price control mechanism and subsidisation system.<sup>521</sup> Since the policy was applied nationwide, it was perceived as a basic right of national citizenship, "something that had been earned and deserved."<sup>522</sup> Soon after the Iran-Iraq war, to minimise economic hardship, the Government introduced rationing which was manifested in the form of subsidisation of energy, basic foods, medicine and utilities. The policy of population growth, which almost doubled the population from 34 million to around 60 million after the war, inflicted a heavy pressure both on the production sector and Government's budget.<sup>523</sup>

The challenges resulting from subsidies and their negative impact on the economy were first addressed after the war in the First Development Plan, enacted in 1989. According to the Plan, subsidisation of essential commodities shall target low-income groups with the aim of its gradual elimination. It was in the Third Development Plan (1999-2004) that the regulator explicitly highlighted the importance of targeting subsidies, particularly those for the energy carriers, with the aim of:

- Rationalising consumption of subsidised products and preventing their smuggling;

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<sup>520</sup> *ibid*

<sup>521</sup> As explained in Chapter 3, as a part of the 'revolutionary social compact' the nation was even promised to receive oil for free. Harris, K. "The End of Iran's Revolutionary Social Compact?" In *The XXVI International Sociology Association World Congress of Sociology*. Gothenburg, Sweden: Department of Sociology, John Hopkins University, July 2012., p2

<sup>522</sup> *ibid*

<sup>523</sup> Nikou, S. "The Subsidies Conundrum." Centre for Conflict Analysis and Prevention- U.S. Institute of Peace, 2010.

- Promoting and encouraging investment and supporting domestic production of subsidised products;
- Reducing the share of wealthy households and increasing the subsidies for low-income families; and
- Providing resources for development of infrastructure and creating jobs.<sup>524</sup>

The issue of energy carriers' subsidisation was also addressed in Article 3 of the amendment to the Fourth Development Plan (2005-2009), in which the Government was obliged to prepare and present to the Parliament a bill for revision of energy prices on annual basis.<sup>525</sup> It was several years later that the Iranian Government took the required initiative to decisively address the issue of energy subsidies and the urgent requirement for their reform.

### **5.3.2. An Overview of Domestic Natural Gas Pricing in Iran**

Domestic energy prices have historically been set 'administratively' in Iran. Since the penetration of natural gas in the country's energy balance in early 1960s, the Government clearly pursued an incentive policy of natural gas domestic consumption. The history of Iran's natural gas pricing dates back to 1960 when the first transmission pipeline was inaugurated, transferring Gachsaran natural gas to Shiraz. In early 1961, the first natural gas consumer in Iran- Shiraz Namazi Hospital- received gas at IRR0.8/cm (around US\$0.12), 20 percent below the price of the available alternative fuel, namely the fuel oil.<sup>526</sup> In 1966, in order to promote consumption of natural gas in Shiraz industrial sector, the Government adopted a more encouraging policy based on the volume of consumption. Accordingly, consumers of more than 0.85mcm of gas (30 mcf) would benefit from a

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<sup>524</sup> Hassani, S. "Vezerat-E Bazargani Va Hadafrmani Yaraneha (Ministry of Commerce and Targeting of Subsidies)." Tehran: Ministry of Commerce, Paez 1389 (Autumn 2010). p.10

<sup>525</sup> *ibid*, p.11

<sup>526</sup> Shiravand, A. "Baresi Mechanism Ghimat Gozari Baraye Gaz Tabi'i Motale'eye Moredi Iran (an Analysis of Natural Gas Pricing Mechanism- a Case-Study of Iran)." Azad University 1384(2005)

special discounted rate which was IRR1/cm as oppose to IRR1.25/cm for consumption of any volume below the aforesaid threshold.<sup>527</sup>

Following the expansion of natural gas consumption in Shiraz, the pricing for all sectors including households, commercial and Governmental premises, were all set below the ‘general tariff’ category where prices for consumption of up to 1000cm per month of gas was IRR 2 (24.2 percent and 19.7 percent cheaper than kerosene and gas oil respectively), consumption of 1000-10000cm per month was IRR 1.8 and any volume more than 10000cm per month was charged IRR1.6.<sup>528</sup>

In 1968, the natural gas pricing mechanism witnessed a significant change based on which three major criteria, namely geographical location, consumption volume, and consumption categories, i.e. public sector (including households, commercial and administrative premises), industrial sector and power plants, were taken into account for pricing natural gas.

**Table 5-2- Natural Gas Pricing based on Various Consumption Volumes and Categories (1968)**

Category	Consumption Rate (monthly)	Tehran (IRR/cm)	Public Sector (IRR/cm)	Khuzestan <sup>529</sup> (IRR/cm)
Public	0-1000	2.2	2	1.9
	1001-10000	2	1.8	1.7
	100001 & above	1.8	1.6	1.5
Industry	0-20000	1.2	1.1	0.8
	20001-200000	1.1	1	0.7
	200001-2000000	1	0.9	0.6
	2000000 & above	0.9	0.8	0.6
Power Generation	--	0.65	0.55	0.60

**Source: Nasr Esfahani, H (March-April 2009)**

<sup>527</sup> Nasr Esfahani, H. "Ghimat Gozari Gaz Tabi Dar Iran (Natural Gas Pricing in Iran)." *Eghtesad Energy (Energy Economics)* no. 113-114 (Farvardin- Ordibehesh 1387 (March-April 2008)).

<sup>528</sup> *ibid.* p.59

<sup>529</sup> Khuzestan is given as an example as the city is considered as the most temperate city in Iran.

This pricing system remained unchanged until the Islamic Revolution when a new mechanism was adopted in which the only index for natural gas pricing was the consumers categories, i.e. households, commercial, industrial or power generation sectors. One of the advantages of this mechanism was that lower gas prices were designated for industrial and production sector in which due consideration was given to industrial growth and economic development.

**Table 5-3- Natural Gas Tariffs (1982-1990)**

	Category	Gas Price ( IRR/cm)
1	Household	5
2	Commercial	5
3	Industry	2
4	Power Generation	2

**Source: Nasr Esfahani, H (March-April 2009)**

In the period 1990-96, the Government for the first time adopted a policy of increasing prices gradually. Concerns over growing consumption of gas in the household sector made the authorities to revise the mechanism and also include the level of consumption as a pricing index. To further control the household consumption trend, in 1997 a new pricing mechanism was introduced varying the pricing formula throughout the year. Depending on the level of consumption, for the first six months of the year, the prices varied between IRR12/ cm and IRR66/ cm and for higher than designated consumption rate, the prices were fixed through a new formula.<sup>530</sup> For the second half of the year, i.e. autumn and winter based on the Iranian calendar, the same method was used with the

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<sup>530</sup> The formula was  $(10.38 + \text{monthly consumption} \times 46\%)$ ; Nasr Esfahani, H. "Ghimat Gozari Gaz Tabi Dar Iran (Natural Gas Pricing in Iran)."no. 113-114 (Farvardin- Ordibehesh 1387 (March-April 2008), p.61

exception of the consumption level and tariff ceiling being increased to 1900 and IRR 90/cm, respectively.<sup>531</sup>

In 1998, a geographical index was also added to the formula and consequently the country was divided to 7 regions where gas tariffs fluctuated between IRR12/cm and IRR108/cm. The tariffs further increased in 2002 when for consumption of up to 600 cm of gas the price was set at IRR67/cm, and any amount between 600 cm and 2600 cm was charged based on a new formula.<sup>532</sup> For consumption of more than 2600 cm, the tariff was fixed at IRR167/cm.<sup>533</sup> Further changes were implemented in 2004 when tariffs for each category were fixed based on different months of the year. Two years later, in 2006, a new gas pricing mechanism was adopted based on a 'consumption pattern', meaning that depending on the region, the tariffs for consumption volume which was in line with the 'pattern' were fixed and any additional volume would attract an extra tariff.<sup>534</sup>

Iranian Governments, both before and after the Revolution, tended to offer generous subsidies to stimulate energy and, in particular, natural gas consumption. It was not surprising that a few decades later, the emergence of a huge domestic market made the Iranian authorities adopt a reversal policy aiming at controlling, if not decreasing, the consumption rate.

### **5.3.3. The Impact of Subsidies on Iran's Natural Gas Development**

In addition to the harmful effects of the subsidies, the negative consequences of low gas prices on its natural gas industry have been further intensified in the light of the country's insufficient production capacity and its expansive domestic market policies. The challenges resulting from low gas prices and the consequent huge domestic market are diverse, and impact substantially on every segment of the Iranian gas industry.

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<sup>531</sup> *ibid*

<sup>532</sup> The formula was  $(37 + \text{monthly consumption rate} \times 5\%)$ .

<sup>533</sup> Nasr Esfahani, H. "Ghimat Gozari Gaz Tabi Dar Iran (Natural Gas Pricing in Iran)." no. 113-114 (Farvardin- Ordibehesh 1387 (March-April 2008)

<sup>534</sup> *ibid*

Since the early 1990s, the Government has pursued the policy of substituting natural gas in the industrial sector to free up more crude oil and petroleum products for export. It has also persistently expanded the domestic market by aggressively developing its national transmission and distribution network (see Sections 2.6 and 2.7). This policy created serious challenges for the Government in supplying adequate volume of gas for oilfields re-injection and export projects (see Chapter 6). The declining rate of oil recovery and the country's notorious gas export to Turkey which has witnessed several cut-offs, particularly during high consumption period, are put forward by experts as some of the major impact of the growing domestic market (see Chapter 2). Shortage of gas has also forced power plants and gas-based petrochemical plants to either switch to other fuels, such as gasoline and fuel oil or lower or even temporarily cut off their gas utilisation during winter.<sup>535</sup> Furthermore, low gas prices, combined with the international sanctions, have significantly curtailed the financial resources available for development of the natural gas production capacity, contributing to delays in bringing major projects onstream (see Section 3.4.2).

The emergence of the unexpected title of Iran as a 'net gas importer' can partially be attributed to its massive domestic market. The Iran-Turkmenistan import gas project came on stream in 1997 in an anticipation of Iran's inability to supply gas to the north and north-east parts of the country particularly in the light of the region's poor transmission facilities (see Section 2.10)

Low gas prices have also created a bias in favour of export projects, undermining the actual and potential needs of the domestic markets. In the absence of a clear price signal, the allocation of gas resources to various options, such as domestic market, oil field re-

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<sup>535</sup> Adibi, S, and Fesharaki, F. "The Iranian Gas Industry" In *Natural Gas Markets in the Middle East and North Africa*, 2011, p.286

injection and export will be distorted and fail to efficiently reflect the maximum value of natural gas resources.<sup>536</sup>

#### 5.4. The Energy Subsidies Reform in Iran

The urgent requirement for subsidy reform was a matter of absolute consensus among Iranian politicians as the status quo was agreed to be costly, wasteful, unfair, counter-productive and altogether unsustainable.<sup>537</sup> With around 1 percent of the world's population, Iran consumed around 5 percent of the global gas produced in 2010 and was ranked as the 3<sup>rd</sup> largest gas consumer in the world after the U.S. and Russia.<sup>538</sup> Per capital natural gas consumption in Iran was 2.5 and 1.5 times bigger than the most populous countries in the world -India and China- and more than twice that of Germany, Europe's most industrialised country.<sup>539</sup> According to the IEA, during the sharp oil price increase of 2008, funding the growing bulk of subsidies cost the Iranian Government an unprecedented US\$120 billion.<sup>540</sup> A year later, the drastic, though short-lived, fall in oil prices also hard hit the country's financial ability to support subsidies.<sup>541</sup>

**Table 5-4- Iran Fossil Fuel Consumption Subsidies (US\$ billions)**

Fuel	2007	2008	2009	2010
Oil	36.56	53.78	29.20	40.92
Gas	18.78	32.03	24.12	25.49
Coal	0	0	0	0
Electricity	9.22	15.19	11.31	14.43

**Source: IEA (2011)**

Iran has also been increasingly facing tighter economic sanctions, which by cutting off the country's financial sector from the rest of the world, have effectively reduced the oil

<sup>536</sup> Darbouche, H. "Issues in the Pricing of Domestic and Internationally-Traded Gas in Mena and Sub-Saharan Africa." 2012.p.,11

<sup>537</sup> Amuzegar, J. "Iran's Subsidy Reform: A Progress Report." *Middle East Economic Survey*, June (2011)

<sup>538</sup> British Petroleum, 'British Petroleum Statistical Review of World Energy', 2010

<sup>539</sup> British Petroleum, 'British Petroleum Statistical Review of World Energy', 2011

<sup>540</sup> "World Energy Outlook." International Energy Agency, 2009

<sup>541</sup> Guillaume, D, et.al. "Iran: The Chronicles of the Subsidy Reform, 2011



revenues on which the budget largely depends.<sup>542</sup> Not surprisingly, the resulting explicit and implicit fiscal costs to the Government's budget were so immense that the Government felt it must act. These difficulties actually strengthened political willpower in Iran which played a key role in the initial success of the reform plan. In 2010, after several failed attempts by previous Governments, the Ahmadinejad administration undertook what the IMF called one of the boldest economic makeovers ever attempted in the oil-rich Middle East to reform energy subsidies.<sup>543</sup>

#### **5.4.1. The Targeted Subsidies Reform Act**

Noting their immense impact, Iranian politicians finally reached an agreement to phase out subsidies. The Government subsequently submitted the reform bill before the Parliament which included objectives, such as promotion of standards of living, equal distribution of wealth, control of fuel smuggling as well as enhancement of country's oil and gas export capacity and reduction of waste and rationalisation of consumption.<sup>544</sup>

Although there were some major disagreements between the Government and the members of the Parliament over some details of the Act, such as the price increase benchmark and Government's aggregate revenue resulting from price increase, *The Subsidies Reform Act* was finally enacted in January 2010 with an expected implementation from the beginning of the Iranian New Year (21<sup>st</sup> March 2010). However, concerns over political unrest, particularly during the aftermath of the controversial presidential election in June 2009, instability of the Iranian foreign exchange market and double-digit inflation rate, postponed the actual reform implementation until December 2010. The reform was planned to be implemented within a five-year period overlapped

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<sup>542</sup> *Global Subsidies Initiative*, "Iran Makes Drastic Cuts to Subsidies for Energy and Other Goods." 8 February 2011

<sup>543</sup> Solomon, J. and Fassihi, F. "Iran Redistributes Wealth in Bid to Fight Sanctions." In *Iran va Jahan* Available at: <http://www.iranvajahan.net/cgi-bin/news.pl?l=en&y=2011&m=07&d=28&a=1>, 2011

<sup>544</sup> Government of Iran. *The press should prepare the society for grand economic surgery*. Retrieved from: <http://www.dolat.ir/NSite/FullStory/News/?Serv=0&Id=183990>, 2010, November 28

with the country's Fifth Five-Year Economic, Social and Cultural Development Plan from 2010 to 2015.<sup>545</sup>

#### **5.4.1.1. What does the Act Say?**

The *Targeted Subsidies Reform Act* (henceforth the Reform Act) calling for a *gradual* increase of energy prices within a five-year period (2010–2015). The retail prices of petrol, diesel, fuel oil, kerosene and liquefied petroleum gas (LPG) are required to increase to no less than 90 percent of Persian Gulf free on board (FOB) prices. Natural gas retail prices are also envisaged to increase to at least 75 percent of average export prices after deducting transmission costs and export taxes. In order to manage future fuel price volatility, the Reform Act authorized the Government to absorb up to 25 percent of the FOB Persian Gulf prices increases (relative to FOB Persian Gulf prices of 2010 when the Reform Act came into force) through further subsidization without changing the consumer price. Furthermore, Note 3 of Article 2 envisages minimum and maximum revenue of IRR100 thousand billion and IRR200 thousand billion (approximately US\$10 and US\$20 billion) from price increases in the first year of the reform.<sup>546</sup>

As many citizens consider cheap energy prices as an entitlement, the Iranian Government faced some major challenges in countering potential social unrest. Thus, to compensate the nation for higher energy prices, the law has authorized payments of a maximum of 50 percent of the fiscal revenue resulting from prices increase to the population in the form of:

- In-cash and in-kind payments, bearing in mind each family's level of income; and

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<sup>545</sup> Article 1, Subsidies Reform Act, Islamic Republic of Iran, 2010

<sup>546</sup> Due to changing economic and political conditions in recent months, the Iranian foreign exchange market experienced an unprecedented volatility that created different official and free market foreign exchange rates. Hence, to minimize confusion, in this Chapter the exchange rate is equivalent to the official rate of US\$1=IRR12,260.

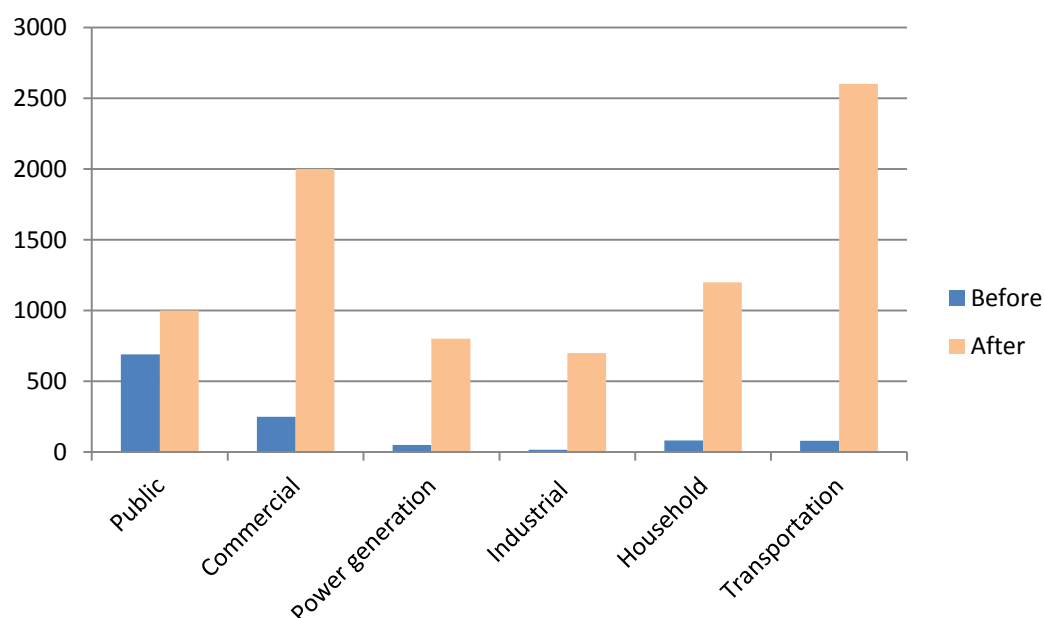
- Social security system, including introduction of national health insurance, job creation and house mortgage loans.<sup>547</sup>

The Reform Act has also designated payment of a 30 percent share of the income from prices increase to support industries and producers through interest subsidies on loans for the adoption of new energy-saving technologies and credit lines to reduce the impact of higher energy costs on cash-flow.<sup>548</sup> The remaining 20 percent share has been allocated to the Government to cover subsequent increases in its costs and to improve its infrastructure.<sup>549</sup>

#### 5.4.1.2. Post-Reform Natural Gas Prices

After the reform, natural gas prices were increased 100-300 percent depending on the sector. As shown in the Figure 5.2, the minimum price increase was implemented in the public sector, from IRR690 to IRR2000/cm, and the maximum price increase targeted the transportation sector from IRR 80/cm to IRR 2600/cm, respectively.

**Figure 5.2- Average Natural Gas Price Increase 2010 (IRR/cm)**



**Source: Ministry of Energy (2011)**

<sup>547</sup> Article 1, Subsidies Reform Act, Islamic Republic of Iran, 2010

<sup>548</sup> *ibid*

<sup>549</sup> *ibid*

In the household sector, which is one of the major gas consuming sector, a multi-tier tariff structure was adopted in which tariff rates varied based on consumption volume, geographical region and season (see Appendix 4).<sup>550</sup>

The country was also divided into 5 geographical regions in which tariffs vary depending on the region's overall temperature.<sup>551</sup> The use of multi-tier tariffs mechanism played a significant role in moderating the impact of the price increase on small-users, particularly the poor.<sup>552</sup>

#### **5.4.1.3. The Actual Implementation of the Subsidies Reform Plan**

In the first year of the reform, the implementation of the reform plan was hailed as a success as it did not entail any significant public unrest or major inflationary impact.<sup>553</sup>

As mentioned above, concerns over public unrest with limited the success of previous attempts at subsidy reform. Endorsed by the international financial institutions such as the World Bank and IMF, the reform plan surprisingly received an overall public acceptance. This has been reportedly due to the "excellent" communication strategy and extensive public relations' campaign which educated and familiarised the nation with the reform process, including the negative impact of the subsidies, energy price rise and envisaged benefits.<sup>554</sup> The cash payment policy to every citizen prior to the effective date of reform (though access to deposits was frozen until the day when energy prices were increased) has also been a decisive factor in successful launch of the plan.<sup>555</sup> The application process was very simple and Iranians only needed to file applications to receive the compensation. The Iranian banking system was also swiftly upgraded to handle direct

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<sup>550</sup> A year is divided into 5 cold (from November to March) and 7 non-cold months.

<sup>551</sup> The 5 geographical regions are: cold 1, cold 2, cold 3, temperate and high temperate. Tehran is, for example, classified as a cold 3 region.

<sup>552</sup> Guillaume, D, et.al. "Iran: The chronicle of the Subsidy Reform.", 2011. p.13

<sup>553</sup> The IMF, for example, in its July 2011 report on Iran's subsidies reform plan, presents a very successful picture of the reform. Guillaume, D, et.al. "Iran: The chronicle of the Subsidy Reform.", 2011

<sup>554</sup> Hassanzadeh, E. "Recent Developments in Iran's Subsidies Reform: Lessons and Recommendations." October 2012

<sup>555</sup> "IEA Analysis of Fossil-Fuel Subsidies." In *World Energy Outlook*. Paris: International Energy Agency, October 2011. p. 33

cash payments to the beneficiaries' accounts in addition to 16 million new accounts which were opened to handle the nationwide cash transfers.

The actual timing of the reform also played a crucial role in the initial success of the plan. Consideration was given to the lowest energy consumption period of the year with less personal travel, air conditioning demand and completion of harvest season. The controversial presidential elections in 2009, during which the Iranian Government showed the public that it was willing to use force to put down unrest, also gave the Government more confidence to implement the reform.

Before the start of the reform, and in order to control the inflation rate, the Iranian authorities adopted several policies to stabilise the exchange rate. The Central Bank's governor frequently made public statements, reassuring people of the country's strong international exchange and gold reserves and the growing trend of oil prices which could provide the treasury with sufficient inflows of foreign exchange.<sup>556</sup> Moreover, administrative policies were adopted to prevent producers and retailers from increasing prices of staple commodities in the anticipation of the reform, in addition to publicly advertising measures for direct distribution of many of the basic staples and commodities to counter panic buying.<sup>557</sup>

The Reform Act and the Government's actual practice, however, received many criticisms both from the politicians and economists. In the Reform Act itself, many crucial points remained unclear including the level and frequency of price adjustments for fuels, the definition of those eligible for compensatory payments and the amount and duration of those payments. This left the door open for the Government to implement the Act based on its own interpretation which, in many respects, was not in compliance with the overall objectives of the plan.

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<sup>556</sup> Guillaume, D, et.al. "Iran: The chronicle of the Subsidy Reform.", 2011, p. 11

<sup>557</sup> *ibid*

As explained above, in order to control inflation and minimize the resulting economic pressure on the population, the Reform Act stipulated a *gradual* price increase to no less than 90 percent of the FOB Persian Gulf prices. It, however, failed to define a clear rate based on which prices should reach to their international market level within a five-year period. It also failed to address the issue of price volatility in international markets and the resulting challenges of how to pass the prices on to the population, should they increase substantially.

The Iranian Government insisted that “the price increase had to be meaningful to be able to effectively reduce energy demand.”<sup>558</sup> As a result, the Government took the “shock therapy” approach and substantially increased prices in order to counter the excessive energy consumption and to ensure an increase in real price of fuels in the light of the annual inflation rate, the increase in international prices and the exchange rate depreciation.<sup>559</sup> Its approach, unsurprisingly, received oppositions from members of the Parliament, who were expecting a gradual price increase of 20 percent per year. The Parliament criticised the Government for creating an uncontrollable rate of inflation through such a sudden and dramatic price rise (for some energy products, such as diesel around 80 percent of their international prices- as of 201 - in one go).<sup>560</sup> The rate at which the Government increased the prices in the first reform phase and its intention to further increase the prices in the second phase<sup>561</sup> raised concerns among members of the Parliament over the Government exceeding the “no less than 90 percent of Persian Gulf

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<sup>558</sup> *ibid.* P.12

<sup>559</sup> Amuzegar, J. "Iran's Subsidy Reform: A Progress Report." June (2011)

<sup>560</sup> Fars News Agency, *Government's violations of Subsidies Reform Act*. Retrieved from: <http://www.farsnews.com/newstext.php?nn=1391020200146920>, (12, April 23)

<sup>561</sup> The government's decision to implement the second phase of subsidies reform also triggered many criticisms. In the second phase, energy prices were expected to increase an additional 30 percent and the amount of the monthly cash payments would rise from IRR455,000 to IRR735,000 rials per person. To accommodate the IRR280,000 increase in cash payments, the government had announced that the cash payment program would be more targeted, with 10 million citizens no longer eligible to receive payments under the scheme. In April 2012, concerns over government's implementation of the second phase without seeking approval from the Parliament made the members of the Parliament to put a ban on implementation of the second phase of the reform.

FOB price increase” provision as stipulated by the Reform Act.<sup>562</sup> Hence, the Parliament in April 2012 amended the Act to place a cap on energy prices increase of “no more than 90 percent of Persian Gulf FOB price.”<sup>563</sup>

The Reform Act also authorized in-cash and in-kind payment of a maximum 50 percent of the revenue resulting from prices increase to families, giving consideration to their average income. Cash transfers allowed consumers choice while the cost to the budget was known with greater certainty than in the case of generalised subsidies and they were also aimed at low income families.<sup>564</sup> The Act, however, did not establish a method or set a benchmark on which to evaluate families’ level of income, nor did it specify the exact amount of monthly cash payments. This left the Iranian Government with major difficulties in identifying the target groups. As Iran has never had an effective and systematic data-collection mechanism, the Government had to announce that all Iranians living in the country were eligible to receive monthly cash payments of IRR455,000 (around US\$45).

In the first year of the reform, from December 2010 to December 2011, the cash payment to 73 million Iranians cost the Government IRR33,000 billion (equivalent to US\$3 billion) every month. Despite the Government’s revenue of around IRR300,000 billion (equivalent to US\$30 billion) from the price increases in the first year of the reforms, which far exceeded the total annual gain of US\$10–20 billion as stipulated by the Act, the actual public cash payment in the corresponding year was approximately IRR450,000 billion (equivalent to US\$ 44 billion).<sup>565</sup> In order to cover the IRR15,000 billion (equivalent to US US14 billion) deficit, the Government , in addition to taking loans from

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<sup>562</sup> *Iranian Students' News Agency (ISNA)*. “movafeghan va mokhalefan-e hadafmandi (Proponents and Opponents to Targeted Subsidies Act) .” 7 May 2012

<sup>563</sup> Parliament of Iran, *Amendment to Targeted Subsidies Act*, May 2012

<sup>564</sup> Gupta, S, et.al. "Equity and Efficiency in the Reform of Price Subsidies- a Guide for Policymakers", (2000), available at : <http://www.imf.org/external/pubs/ft/equity/index.htm>

<sup>565</sup> “Iran's Poor Economy and the Subsidies Getting Targeted (Eghtesad-E Bimar-E Iran Va Yaranehai Ke Hadafman Mishavad) ". *Iran's Chamber of Commerce, Industry and Mine*: [http://iccim.ir/fa/index.php?option=com\\_content&view=article&id=2737:-----s-----&catid=38:---&Itemid=63](http://iccim.ir/fa/index.php?option=com_content&view=article&id=2737:-----s-----&catid=38:---&Itemid=63), 1387 (2008)

the Central Bank, distributed the 30 percent and 20 percent shares allocated for industries and the Government itself; it also used tax revenues and the development funds of Ministries of Oil and Energy to pay for the monthly cash hand-outs.<sup>566</sup>

## **5.5. The Impact of the Energy Subsidies Reform**

Since its implementation, subsidies reform plan has had diverse impacts on the Iranian economy as a whole. The reform process can be divided into two periods with different degrees of impact: the first period which overlaps with the first year of the reform with some degree of success, and the second period which started from January 2012 and onwards with drastic impacts on the economy, also intensified by the new round of international sanctions.

### **5.5.1. The Impact on Iran's overall Economy**

One of the major concerns about eliminating the subsidies in Iran was the inflationary impact it might have on the economy. There was speculation that increasing energy prices can cause two kinds of inflationary effects. It could increase the direct energy expenditure of households and secondly, by raising the input prices of energy, it would increase the production cost of other goods and services.<sup>567</sup> Also as the Government had planned to focus on universal cash-payments (as opposed to the potential in-kind compensation measures), there were concerns that the central bank's money creation approach would increase the liquidity and further add to the inflation.

In the first year of the reform, despite all the concerns and pessimisms, the plan started with no major political and social unrest thanks to the Government's generous cash-payments aiming at "alleviating all Iranians from poverty".<sup>568</sup> High oil prices also helped the Government to load the treasury with massive foreign-exchange reserves, preventing a sharp increase in the inflation rate as the Government artificially kept foreign exchange

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<sup>566</sup> *ibid*

<sup>567</sup> Tavanpour Paveh, M. "Energy Subsidy Reform in Iran." *Energy Subsidies: Lessons Learned in Assessing their Impact and Designing Policy Reforms* (2003), p.108

<sup>568</sup> Guillaume, D, et.al. "Iran: The chronicle of the Subsidy Reform." 2011



rates low. As Iran's economy is import-based, such a policy encouraged commodity imports and kept prices down.<sup>569</sup> It also helped the industrial and producing sectors to import their raw materials at a competitive price. A few months into the reform however, increasing liquidity, subsequent increase of commodities' prices as a result of the increase in the producers' energy inputs, downgrade and bankruptcy of many businesses, rising unemployment and the Government's failure to provide the industrial sector with the designated support package to a large extent offset the Government's anti-inflationary policies. The situation became even more dire as the second year of the reform which coincided with the imposition of the hardest ever sanctions on Iran (see Section 3.4).

As one of the motivations for reform was to minimise the impact of the international sanctions on the country's treasury, the Government has apparently failed to consider the other side of the coin which was the potential detrimental impact that any new set of sanctions could have on the country's economic stability. As explained in Chapter 3, sanctions created exchange rate instability causing a 250 percent depreciation of the currency and ramping up the inflation rate. Rising inflation reduced the value of the cash payments and the ability of the population to cope with the rising costs of commodities.<sup>570</sup> Also as the energy prices, according to the Reform Act, are linked and should be adjusted based on the FOB Persian Gulf prices, the depreciation of the Iranian currency has caused the return of a major part of the subsidies back into the energy market. The practical implication of the currency depreciations can be found in substantial increase of fuel, particularly diesel smuggling to the neighbouring countries.<sup>571</sup>

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<sup>569</sup> Ahmad Tavakoli, a member of Parliament, is known for his strong critical position against the government's policies in implementation of subsidy reform: <http://alef.ir/economic>

<sup>570</sup> Hassanzadeh, E. "Recent Developments in Iran's Subsidies Reform: Lessons and Recommendations." October 2012

<sup>571</sup> Fars News. "Afzayeshe Ghachaghe Gazooil ( Increase of Diesel Smuggling)." In <http://www.farsnews.com/newstext.php?nn=13910811000017>, 11 Azar 1391 (01 October 2012).

Inconsistent and contradictory evidence complicates assessment of the impact of energy subsidies reform on the industrial and producing sectors.<sup>572</sup> The industrial sector in Iran was already at a competitive disadvantage because of high cost of labor, economic sanctions, old capital stock and an unstable foreign exchange market. The 30 percent share of Government revenue from price reform to support industries and producers was expected to be a significant stimulus to Iran's domestic production and further diversification efforts.<sup>573</sup> As illustrated in the Figure 5.2, the rise of energy prices in the industrial sector was among the highest in the recent price increases, causing high production costs. At the same time, for fear of triggering public unrest resulting from increase in commodity prices, Government authorities prohibited producers and retailers from increasing the prices of their products, conducting frequent inspections to enforce the policy.<sup>574</sup> Facing, on the one hand, rising production costs and, on the other hand, strict price controls from the Government, industries found it very difficult to remain profitable. Based on reports from members of Parliament and chambers of commerce, this has caused many small- and medium-size businesses to go bankrupt or downgrade their businesses, adding to the country's unemployment rate.<sup>575</sup> At the same time, allocation of almost all acquired revenues from price increases to cash payments, in the absence of an active and productive industrial sector, has caused a significant rise in imports and loss of the revenues that were supposed to be reinvested in industries to create jobs and to encourage economic growth.

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<sup>572</sup> Samsam B. et.al. "Energy Consumption in the Islamic Republic of Iran." edited by OPEC Review: Organization of the Petroleum Exporting Countries, 2000

<sup>573</sup> Guillaume, D, et.al. "Iran: The chronicle of the Subsidy Reform." 2011

<sup>574</sup> Protection of Customer's and Producer's Rights Organization. The *inspection in implemентаion of targeted subsidies act is one year old*. Retrieved from: <http://yaraneh.cppo.ir/pages/frontEnd/newsPreview.aspx?guid=0a6a05da-4cee-405c-a2bf-7a8c175742e5>, December 2010

<sup>575</sup> *Donya-e Eghtesad*, Arguments over the share of the industries. Retrieved from: [http://www.donya-e-eghtesad.com/Default\\_view.asp?@=296616](http://www.donya-e-eghtesad.com/Default_view.asp?@=296616), 13 April 2012

### 5.5.2. Implications for the Iranian Natural Gas Industry

In the natural gas sector, like other energy sectors, there were expectations that potential savings from reduction of domestic consumption could increase to the country's export capacity. It was also predicted that the revenue resulting from the export of energy products could support a "virtuous cycle of investment in the energy sector" that would further increase production and subsequently enhance export capacity.<sup>576</sup> In practice, however, natural gas price increase did not have major downward impact on its domestic consumption. According to the NIGC annual report, in the first year of the reform, total gas consumption grew by 9 percent.<sup>577</sup> The exception was the household sector where consumption decreased by 1.5 percent. The reduction in the household consumption reportedly encouraged diversion of gas to the industrial sectors, particularly power generation, reducing the risk of power cuts and blackouts.<sup>578</sup> Also, in the second year of the reform, the consumption is estimated to have increased by 8 percent as a result of further expansion of the national grid (see Section 2.7).<sup>579</sup> Hence, considering the growing rate of gas end-users in Iran, it is not surprising to find no major reduction in natural gas consumption despite substantial price increase.

In terms of gas export capacity, although the export volume to Turkey almost doubled and reached to 9.1 bcm in the first year of the reform, the increase can hardly be attributed to the subsidies reform.<sup>580</sup> An account of Iran's production capacity in the same year shows that the 3.9-percent increase in the country's production capacity (an additional 5bcm production) is to a large extent the main reason for increase of the country's export capacity.

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<sup>576</sup> Guillaume, D, et.al. "Iran: The chronicle of the Subsidy Reform." 2011, p.8

<sup>577</sup> Nation Iranian Gas Company. *Energy consumption annual report* . <http://www.nigc.ir/Site.aspx?ParTree=111013&LnkIdn=68601> , January 2011

<sup>578</sup> Owji, Javad. "Tavafogh Jadid Iran Va Torkamanestan ( Iran-Turkmenistan New Deal)." *Shana, NIOC official news website* (27 November 2012)

<sup>579</sup> *ibid*

<sup>580</sup> British Petroleum, 'British Petroleum Statistical Review of World Energy', 2012

Furthermore, the country has not been successful in injecting the capital investment needed for development of the gas industry. Based on Iran's Fifth Five-Year Development Plan, the country has aimed at producing 1.3 bcm/d of gas, which according to Owji, requires an investment of US\$6 billion per year.<sup>581</sup> A major part of this investment was expected to come from subsidies elimination which was also put forward by the Government as one of the main incentives for reform plan. As mentioned above, out of US\$30 billion revenue that the Government gained from the energy prices increase in the first year of reform, 30 percent (US\$9 billion) was the share of the industrial sector, including natural gas development projects. As the Government has been very much concerned about potential social unrest, not only the industries' share but also a portion of the funds allocated in the annual budget for petroleum projects, was redistributed among the population leaving the Government to support infrastructure projects, particularly those in the natural gas industry.<sup>582</sup>

As a result of the Government's malpractices in implementation of the reform plan combined with its policy of 'aggressive' expansion of the domestic gas market and its failure to increase the production capacity, the subsidies reform is unlikely to play a major role in substantial development of Iran's natural gas industry at least in the short and possibly medium term- be it in consumption reduction or development of resources by re-investing the acquired revenues. Additionally, as consumption and production are growing almost at the same rate, the pre-reform challenges, including shortages of gas for oil field re-injection projects, the country's dependence on gas imports and difficulties in meeting its export commitments, are likely to persist.<sup>583</sup>

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<sup>581</sup> Owji, Javad. "Tahaghoghe Ahdaf-e San'ate Gaz (Materialisation of Gas Industry's Objectives)." *Shana, NIOC official news website* (October 2012)

<sup>582</sup> Guillaume, D, et.al. "Iran: The chronicle of the Subsidy Reform." 2011

<sup>583</sup> On 27 November 2012, the NIOC's official news website, Shana, quoted from Javad Owji that the Oil minister, Rostam Qasemi, has requested increase of importing gas volume to Iran following a visit to Turkmenistan. Owji, Javad. "Tavafogh Jadid Iran Va Torkamanestan (Iran-Turkmenistan New Deal)." *Shana, NIOC official news website* (27 November 2012)

Drawing firm conclusions from Iran's subsidy reforms, in the light of its unique economic situation, is a challenging task. Subsidies reform began at one of the most challenging times, politically and economically, since the 1979 Revolution.<sup>584</sup> The Government's failure in implementation of the reforms, combined with the harsh impact of international sanctions, caused dramatic economic consequences directly affecting its overall success of the reform. A sharp rise in inflation, inducing people to seek a "safe haven" (i.e. dumping the Iranian rial for gold and foreign currencies), causing widespread bankruptcies among industries and producers are some of these negative impacts.<sup>585</sup>

The cash-transfer mechanism which was introduced to minimize the impacts of subsidy reform has evolved to help the population to cope with soaring inflation due to economic sanctions, currency depreciation and rising commodity prices. The Government has so far failed to maintain the macroeconomic stability of the economy, which was essential to prevent a rapid erosion of the benefits of the reform. There is speculation that the subsidies are at risk of creeping back as Government is increasing its control over prices.<sup>586</sup> Therefore, Iranian subsidies reform plan can be criticised from various angles:

**Errors of inclusion-** In Iran cash-handout to 73 million citizens left the country not only with no fiscal savings but also created a growing inflation rate which significantly undermined the actual value of the payment made to the population. Cash transfers were initially designed to exclude spill-over to better-off groups. Government failure to target the mitigation measures to low-income families undermined the equity and efficiency aims. Therefore, cash payment should have targeted poor households as opposed to universal subsidies.

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<sup>584</sup> Nikou, S. "The Subsidies Conundrum." Centre for Conflict Analysis and Prevention- U.S. Institute of Peace, 2010

<sup>585</sup> Amuzegar, J. "Iran New Subsidy Reform: A Shot in the Dark." June, (2010)

<sup>586</sup> Salehi-Isfahani, D, et.al. "Subsidy Reform in Iran: Evidence from Survey Data." 25 September 2012

**Time-limits-** Perpetual cash payment had not been the objective of the subsidies reform. A time-limited exit strategy for targeting subsidies and phasing out cash payments was required to be defined from the very beginning.

**Non-hostile international environment-** Rapid reform required a favourable political and economic environment. As reviewed above, lack of such an environment created an unfavourable situation in which the resulting foreign exchange volatility and increasing inflation rate caused serious challenges over the future success of the plan.

**Transparency-** Since the beginning of the reform and even during ratification of the Reform Act, chronic disagreements between the Iranian Parliament and Government have caused excessive division and rivalry among bodies of powers. This diminished cooperation and coordination between the Parliament and president causing expression and publication of inconsistent and contradictory reports and interpretations. It also made the task of scientific analysis of the reform very challenging.

To sum up, long-term success of the reform requires the adaptation of some key policies, including:

- Reducing the number of cash recipients in order to control liquidity and to free up funds for reinvestment in infrastructure projects;
- Providing long-term, low interest financial support for industrial sectors to increase output and employment through increased efficiency;
- Replacing cash payments with in-kind measures, such as health insurance, education, investment in public transport and creating pension funds, to minimise Government borrowing from the central bank;
- Improving international relations and enhancing cooperation between the Government and Parliament.



## 6. Chapter 6- Allocation Options: Gas for Export Markets or Domestic Consumption?

### 6.1. Introduction

In this Chapter, it is intended to examine and contrast the domestic and export options facing Iran in the utilisation of its gas. Lack of data makes this a very challenging task, but it is essential to at least attempt such an analysis in order to evaluate the different domestic views which have been expressed on the subject, and to highlight the issues which need to be taken into account to reach a robust conclusion in this regard.

As we have seen in Chapters 2, 3 and 5, the expansion of gas production capacity has been increasingly constrained as various projects have been delayed, postponed or cancelled. Since 2010, mobilisation of capital, at large-scale for petroleum projects, had become almost impossible as a result of international sanctions. Low gas prices and political bias in favour of domestic consumption have inflated the size of the country's gas market, reducing availability for exports, but at the same time, created strong economic arguments in favour of the latter. This has caused a prolonged debate between Iranian politicians and decision makers about overall economic, political and social benefits of allocating gas resources to export or domestic markets, which has contributed to further postponement or cancellation of projects. Since the commercialisation of its natural gas resources in the late 1960s, the country has adopted various, and in most cases contradictory, policies as to the best use of its gas resources. While in the pre-revolution era, priority was given to natural gas exports, domestic consumption was extensively pursued post 1979 by the revolutionary Government. Constant changes in natural gas resource allocation policy have received many criticisms from scholars about the country's failure to optimally allocate its natural gas resources to different uses.<sup>587</sup>

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<sup>587</sup>Ghorban, N. "Potentials and Challenges in the Iranian Oil and Gas Industry", *Middle East Institute* (29 January 2009); Adibi, S, and Fesharaki, F. "The Iranian Gas Industry" In *Natural Gas Markets in the Middle East and North Africa*, 2011; Hassantash, G.H."Saderate Gaz Iran Az



The issue of optimal allocation of natural resources is very complicated as it requires an in-depth economic analysis of the maximisation of economic returns from allocation of resources to different options. Depending on the nature of resources, market conditions and a given country's overall economic policy, optimal allocation options may vary. In case of Iran, where the country persistently follows multiple allocation policies, the availability of adequate gas supply is a fundamental priority. Scarcity is the major element in optimal resource allocation; meaning that when a resource is scarce and inadequate to meet the needs of all markets, optimal allocation analysis helps Governments to allocate resources to the most economically attractive end-users.

The concept of 'economic maximisation' is also addressed in economic literature. The 'Neoclassical' economic theory of optimal energy resource allocation underlies the basic logic for "maximisation of the present value of some stream of economic returns."<sup>588</sup> The fundamental assumption is that "economic actors are motivated to make choices by the goal of maximising some measures of economic return."<sup>589</sup> Therefore, according to the Neoclassical theory, the optimal allocation policy is selling the resources at "whatever price to those classes of customers willing to pay the most in excess of their cost of supply."<sup>590</sup> In other words, the relevant criterion is divergence between prices and costs of supply.<sup>591</sup> Therefore, the most important issue which should be addressed in the optimal allocation discussion is the issue of pricing. Economic optimality requires that the gas prices are based on 'economic cost' and, according to Hotelling, reflect exhaustibility of

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Tavahom Ta Barname (Iran's Gas Export: From Illusion to Plan)." *Mosalas*, edited by Kaveh Karegar, 2006 (1385); Naficy, H. "Resource Depletion, Dependence and Development- Country Commentary Iran.", 2008; Ebrahimi, I., *Iran's Gas Export: Opportunities and Threats (Saderat-E Gaz-E Iran: Forsat-Ha Va Tahdid-Ha)*, 1386 (2006)

<sup>588</sup> Nordhaus, W.D, et.al. "The Allocation of Energy Resources." *Brookings Papers on Economic Activity* 1973, no. 3 (1973)

<sup>589</sup> Koplin, H.T. "Conservation and Regulation: The Natural Gas Allocation Policy of the Federal Power Commission." *Yale Law Journal* 64, no. 840 (1954-1955)

<sup>590</sup> Cropper, M.L, et.al., 'The Optimal Consumption of Depletable Natural Resources: An Elaboration, Correction and Extension', *The Quarterly Journal of Economics* 92, no. 2 (1978): 337-44

<sup>591</sup> Koplin, H.T. "Conservation and Regulation: The Natural Gas Allocation Policy of the Federal Power Commission." 1954-1955

resources.<sup>592</sup> The idea of ‘economic maximisation’ arises from gas prices which reflect opportunity cost. In case of domestically supplied gas, for example, the price should equal to the long-run marginal cost (LRMC) of gas supply and a depletion premium.

Notwithstanding the importance of economic objectives in the allocation of resources, the issue of ‘distributional impact’ and ‘welfare maximisation’ inevitably offers challenges to mere economic analysis of the natural resource allocation. The growing population and economic development increase demand for depletable resources which could in return have a profound effect on the production level and the level of welfare in the future.<sup>593</sup>

Within a social context, the allocation of resources is optimal if it is efficient and equitable.<sup>594</sup> Efficiency and equity define social optimality as a necessary component for maximisation of society’s welfare.<sup>595</sup> When allocating efficiently and equitably “it is impossible to make one member of the society better off without making some other worse off” and “the final distribution of goods and services is fair.”<sup>596</sup> The distribution of natural resources wealth across the economy has important political-legal rationale as all citizens have an equal claim, and for this reason “they often have strong feelings of entitlement to their resources and the revenues they provide.”<sup>597</sup> It is as a result of the same sense of entitlement to hydrocarbons that in hydrocarbon-rich countries, fuel subsidies are a common and very popular policy.

Resource-rich countries of the MENA region have been remarkably dependent on energy resources for the economic development and the improvement of the national welfare. Abundant energy at low cost is fundamental for industrialisation and increasing of standards of living. In Iran, low prices in gas-based industries, such as petrochemical

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<sup>592</sup> The Theory of Exhaustible Resources”: Hotelling, H. "The Economics of Exhaustible Resources." *The Journal of Political Economy* 39, no. 2 (1931): 137-75

<sup>593</sup> Heijman, W.J.M. *Depletable Resources and the Economy*, Wageningen Agricultural University, 1991

<sup>594</sup> *ibid*

<sup>595</sup> Morey, E. "Notes on Welfare Economics- Ii. Efficiency, Equity and the Optimal Allocation." September 2002

<sup>596</sup> *ibid*

<sup>597</sup> Segal, P. "How to Spend It: Resource Wealth and the Distribution of Resource Rents." *Oxford Institute for Energy Studies* (May 2012), p.10

plants, have offered competitive advantages to the domestic producers, created jobs and generated revenues for the Government. Natural resources constitute a significant portion of the Governments' revenues. They are volatile and exhaustible and belong to all citizens of the country in which they are located. Resource revenues almost invariably flow through Government budgets on their way to citizens. But there are two features of natural resource revenues that are distinctive from general revenues. First of all, "their time profile is distinctive: revenues are volatile, driven largely by the volatility of commodity prices, and they are, in principle, temporary [...]; the second unique feature of resource revenues is their ownership: all citizens have an equal claim on them."<sup>598</sup> As a result, citizens of resource-rich countries generally have "a strong sense of entitlement to their resources, a sentiment sometimes known as 'resource nationalism'."<sup>599</sup> This is a right which is also highlighted in the United Nations General Assembly Resolution 1803. Although the resolution reaffirms the nations' permanent sovereignty over their natural resources, it conditions the use of resources for "the well being of the peoples".<sup>600</sup> A state's sovereign right to freely explore, exploit and dispose of its natural resources, and the assertion that "the extent to which the peoples in a resource-rich State...are entitled to (extra) benefit from resource exploitation...is a matter of domestic policy",<sup>601</sup> meaning that the expansion of the concept of "well-being" or "beneficial use" of resources is connected to states' sovereign right over natural resources.<sup>602</sup> States shall operate in such a way to ensure that the well-being of their citizens is derived from [their] efficient allocation of the resources. Therefore, permanent sovereignty is "as much an issue of

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<sup>598</sup> *ibid*

<sup>599</sup> *ibid*

<sup>600</sup> United Nations General Assembly Resolution 1803

<sup>601</sup> Schrijver, N. *Sovereignty over Natural Resources: Balancing Rights and Duties*: Cambridge University Press, 1997.p.9

<sup>602</sup> Barrera-Hernandez, L. "Sovereignty over Natural Resources under Examination: The Inter-American System for Human Rights and Natural Resource Allocation." *Annual Survey of International and Comparative Law* 43, (2006)

state duties as it is one of state rights”<sup>603</sup>; that is the state’s duty of maximisation of national wealth to accelerate economic development.

Nevertheless and as reviewed in Chapter 5, distributional objectives often lead to major economic and allocation distortions and inefficiencies. Therefore, striking a balance between economic efficiency and equity and as Allsopp and Stern put it “the transition from distorting to less distorting ways of meeting distributional objectives” is vital in the allocation of resources, though this has proved to be very difficult in nearly all countries.<sup>604</sup>

It is clear that in order to conduct a thorough analysis on the subject of gas pricing and optimality of resource allocation, certain conditions should be met: first of all, the analysis can only be done through a quantitative framework, embracing extensive numerical and sensitivity analyses; it also requires econometric analysis, and ideally an economic model allowing the analysis of domestic and international energy markets. Finally and most importantly, this type of work requires access to reliable data for prices of natural gas and other fuels charged domestically and internationally, long-run average incremental cost (LRAIC), the price of oil, capital cost, investment data sets, development and production margin, transmission and distribution charges, as well as production capacity, market development and many other variables.

The only comprehensive literature found on the optimal allocation of Iranian natural gas resources is a Doctoral Thesis conducted by Tooraj Dehghani at Rash University in Iran used the ‘Markowitz Optimal Portfolio’ theory.<sup>605</sup> Not surprisingly, he concluded that due to lack of data, his analytical estimates are based on rough assumptions where the risk of error had been minimised, to the extent possible, by extensive computing analyses.<sup>606</sup>

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<sup>603</sup> *ibid*

<sup>604</sup> Allsopp, C, and Stern J. “The Future of Gas: What Are the Analytical Issues Relating to Pricing?”, 2012, p. 20

<sup>605</sup> Tooraj Dehghan 2007

<sup>606</sup> Dehghani, T., *Model Hadeaxar Sazi Manafe Eghtesadi Hasel AZakhayer Gazi Iran (a Model for Maximisation of Economic Benefits Resulting from Iran's Natural Gas Resources)*. 2007, p.276

This Chapter does not pretend to provide an economic evaluation of allocating Iranian gas to different markets. Such an economic analysis is far beyond the scope of this research which is mainly concerned with political, legal and policy matters; and the data for such a comprehensive analysis either does not exist or is not readily accessible.<sup>607</sup> Therefore, the scope of this Chapter remains confined to a descriptive analysis of social and economic benefits resulting from different uses of Iranian gas.

The Chapter proceeds by reviewing the political debate between Iranian politicians over the allocation of gas to domestic or export markets and sets the stage for a discussion of the benefits of allocating gas to different markets. This is followed by an analysis of various allocation options, including domestic consumption of gas, re-injection into the oilfields and export of natural gas both through pipeline and LNG as well as added-value products. It then aims to illuminate different social and economic benefits resulting from allocating gas to these options. Finally, the Chapter concludes by addressing the challenges of conflicting allocation priorities and offers thoughts on prioritisation of options in the current economic and political conditions.

## **6.2. The Political Debate over Gas Export versus Domestic Consumption**

Since the recommencement of Iran's gas export in the early 2000s, extensive opposition have been directed by members of the Parliament towards the Iranian Government and the Ministry of Petroleum, arguing that gas export policies do not serve the long-term interests of the country. Basing their arguments on rising oil prices, increasing decline rates of oilfield production and the growing needs for job-creation and revenue

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<sup>607</sup> Behzad, Hamid., *Eghtesade San'ate Gaze Iran (the Economics of Iranian Gas Industry)*. University of Tehran, 1973; Davoodi, M. "Baresie ta'sire avamele mohiti va estratejihaye monaseb dar saderate gaze Iran (Analysis of circumferential elements and proper strategies for Iran's natural gas export)," In *Faculty of Management*. Tehran: Azad Tehran University, 2008; Ebrahimi, I. *Iran's gas export: opportunities and threats (Saderat-e gaz-e Iran: forsat-ha va tahdid-ha)*: Research Institute of Tadbir-e Eshtesad, Mir Saleh Kohan, L. "Arzyabi eghtesadi arzeye gaze Iran be bazare orupa (Economic analysis of exporting Iranian gas to European Market)," In *Economics Faculty*. Tehran: Azad Tehran University, September 2007; Mosleh, K. *Estefadeye behine az manabe gazi Iran (Optimal usage of Iran's natural gas resources)*: Majlis Research Centre, (1387) 2009

generation, members of the Parliament, mainly from the Parliament Energy Committee, urge the allocation of Iran's vast gas resources to domestic use through oilfields re-injection and development of petrochemical and gas-based industries.<sup>608</sup> This section aims to elaborate on this debate.

The proponents of gas export believe that in the international political context, gas export, particularly through pipelines, is inextricably linked with Iran's overall security arrangements, "regardless of the economic viability of export projects."<sup>609</sup> After the Revolution and despite the cancellation of Iran's only gas export project, i.e. the export to the Soviet Union,<sup>610</sup> Iran began "to recognize the strategic value of gas exports by pipeline and realize that an aggressive gas export policy was a very important tool in energy diplomacy."<sup>611</sup> Russia was observed as a successful case in promoting powerful energy diplomacy, convincing the Iranian policy makers that "creating a bilateral or multilateral dependence via gas pipelines could be regarded as an energy strategy that would promote Iran's regional and multiregional political advancement."<sup>612</sup> In other words, the supporters of gas export believe that exporting pipeline gas will inevitably promote the national security by increasing Iran's international bargaining power.

Iran's policy of taking political advantages from establishing natural gas export ties with regional and international markets came into existence in the early 1990s when the country had been facing increasing political and economic pressures from the U.S. Government. As the U.S Government tried to implement a stronger containment policy against Iran and weakened the Government by isolating it from the international political and economic arena, the Government increasingly used energy export to neutralise or minimise the impact of U.S. attempts to influence other countries' positions vis-à-vis Iran. As highlighted by Nasser Soudani, a former member of the Parliament, natural gas

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<sup>608</sup> Mosleh, K. *Estefadeye Behine Az Manabe Gazi Iran (Optimal Usage of Iran's Natural Gas Resources)*: Majlis Research Centre 2009 (1387)

<sup>609</sup> Barkeshli, F., 'Iran's Energy Diplomacy: Challenges and Opportunities', June 2012

<sup>610</sup> For more detail, see Chapter 2.

<sup>611</sup> Barkeshli, F., 'Iran's Energy Diplomacy: Challenges and Opportunities', June 2012

<sup>612</sup> *ibid*

export is a “necessary” policy for Iran in the light of intensifying international sanctions against the country irrespective of its economic profits.<sup>613</sup> Hence, many Iranian politicians believe that by making gas importing countries dependent on Iran’s gas supply, the country will gain the required capacity to dominate these countries in future negotiations and decision-making processes. Such a tactic which is generally known as bargaining power is widely believed to have been utilised by Russia vis-à-vis the European states to exercise monopolistic pricing or to have a certain political leverage.<sup>614</sup> As a part of its foreign policy, Iran also planned to derive a direct influence from its role as an energy supplier. As one of OPEC’s largest supplier, Iran clearly relies on its ability to impact oil prices through its production levels, as it did in the 1970s. Also the expansion of the country’s natural gas trade ties with regional and international markets is perceived as an opportunity which provides the country with the potential to use gas supplies to influence the policies of its customers. Supporters of natural gas exports believe that, for example, Turkey’s rejection of the intensification of international sanctions, and unwillingness to cease cooperation is a result of its gas import reliance on Iran.<sup>615</sup>

In addition to strengthening Iran’s bargaining power, the proponents of gas exports believe that gas exports, particularly through LNG, bring significant economic advantages, including the attraction of foreign investments, technology transfer and job creation. They argue that by diversifying market opportunities, gas export projects would boost revenue generation and improve the country’s participation in international markets.<sup>616</sup>

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<sup>613</sup> *Mash'al*, “Gas Export Gives Iran Stronger Position”, 30 September 2007

<sup>614</sup> Smith, K.C. “Managing the challenge of Russian Energy Politics: Recommendations for U.S. and EU Leadership.” Centre for Strategic and International Studies, November 2010; Saunders, P.J. “Russian energy and European Security: a Transatlantic dialogue.” The Nixon Center, February 2008. For a different view on the subject, read: Pirani, S, et.al. “The Russo-Ukrainian gas dispute of January 2009: a comprehensive assessment.” Oxford Institute for Energy Studies, February 2009; Stern, J. “The Russian-Ukrainian gas crisis of January 2006.” Oxford Institute for Energy Studies, January 16, 2006

<sup>615</sup> *Mash'al*, “Gas Export Gives Iran Stronger Position”, 30 September 2007

<sup>616</sup> Mir Saleh Kohan, L., *Arzyabi Eghtesadi Arzeye Gaze Iran Be Bazare Orupa (Economuc Analysis of Exporting Iranian Gas to European Market)*, Azad Tehran University, September 2007

These views are also driven by Iran's unique geo-political position in the region. The country is centrally located among the world's major oil and gas producers, sharing land and sea borders with 15 neighbouring countries. It has a relatively strong economy with a large pool of skilled manpower and a well-developed infrastructure. Additionally, Iran is located strategically in the vicinity of Russia, the CIS countries and the Caucasus where the already existing infrastructure can be used to transfer Iran's gas to international markets. It is also on the eastern border of Europe and western border of Asia which offer the country the required potential to export large quantities of natural gas both to EU markets in the west, and to the growing energy markets of East Asia and beyond. Therefore, given its strategic location, manpower and natural wealth, supporters of gas exports are convinced that Iran can emerge as a major supplier of natural gas to regional and international markets.

Nevertheless, Iranian gas exports have also had serious opponents, arguing that given Iran's limited production capacity, the priority should be given to the domestic consumption of natural gas. They base their argument on the fact that the consumption of gas in power generation plants frees up a large share of petroleum products for export; in addition, re-injection of gas into the old oilfields enhances the recovery rate and increases the production which, in the light of high oil prices, entails significantly higher economic returns than export of gas. They conclude that at current production rates and considering the prevailing requirements for fulfilment of Iran's growing domestic market needs, Iran will not have enough gas to allocate to export markets.

Despite the importance of economic analysis for allocation of the Iranian gas to export markets, the arguments of both proponents and opponents of natural gas exports lack such analysis to support their views. No substantial analysis of economic costs and benefits of exports versus domestic consumption has been presented by either side of this debate.



### 6.3. Different Uses of Iran's Natural Gas

The debate between Iranian politicians over the allocation of Iranian gas to export or domestic markets should be inclusive of an analysis about how to maximise economic rent and guarantee efficiency through designation of natural gas resources to different consuming options, while giving due consideration to the issue of welfare maximisation. The maximum wealth generation from natural gas resources can significantly contribute to the Government's revenue and the country's overall economic growth. It is particularly important, in the light of Iran's limited production capacity and its multiple allocation options, to provide an analytical basis for the allocation of gas resources.

This section will describe different uses of Iran's natural gas and focus on the overall economic, social and political significance of allocating gas to different purposes, including domestic market, oilfield re-injection and export.

#### 6.3.1. Domestic Consumption

There is a consensus among Iranian politicians over giving the priority to the secure and adequate supply of gas to the domestic market, which mainly consists of household, commercial and power generation sectors. These sectors, which combined constitute around 65 percent of the Iranian natural gas domestic consumption, i.e. around 90 bcm in 2011,<sup>617</sup> play a significant role in the country's economic and social development. Energy plays an instrumental role in all key sectors of any country's development- health, lighting, domestic heating, transport, agriculture and industrial production and etc.<sup>618</sup> Hence, it is not surprising that where energy resources are available, the fulfilment of domestic needs is given priority, as shortages would create poverty.<sup>619</sup> Equally important is access to energy resources at low prices, particularly in the MENA regions, where

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<sup>617</sup> "Iran's Energy Balance." Ministry of Energy, 2011

<sup>618</sup> "Reopening of Upstream Oil & Natural Gas to Foreign Interests: Views and Actions of Iran, Iraq, Kuwait and Saudi Arabia." edited by Gas & Energy Law Intelligence Oil: International petroleum enterprises, 2005, p.8

<sup>619</sup> *ibid*

Governments are concerned that any upward changes in energy prices might trigger social unrest (see Chapter 5).

Iran's post-revolution gas policy predominately focused on the development of its domestic market. Expanding 300 fold since the Revolution, the country's natural gas distribution grid supplied gas to more than 55 million Iranians in 2012.<sup>620</sup> In addition, since the mid 1990s, the country has extensively encouraged the consumption of gas in power generation plants in order to keep oil available for export. Expansion of gas-fired power generations has also had significant environmental benefits as it has substantially improved air quality. For many years, the highly inefficient energy consumption pattern in Iran, mainly as a result of low energy prices, created a huge domestic market and caused extensive wasteful consumption (see Chapter 5).<sup>621</sup> Despite the subsidies reform in Iran in 2010, the natural gas consumption still has a growing rate, though at a slower pace, mainly as a result of the Government's domestic market expansion policy and depreciated technologies and capital stock in the industrial sector and power generation plants.

Since 2010 and as a result of the subsidies reform plan, the energy pricing mechanism in Iran was modified in order to accommodate the expectation for increasing Government revenues, the sector profitability and preventing wasteful consumption. As a result, post-reform gas prices increased substantially in 2010, reaching US\$1.61 MMBtu for power generation plants -- 9-fold increase -- and US\$4.61 MMBtu for commercial sector. In the same corresponding year, in the house-hold sector, a multi-tier system was introduced and the prices increased to an average US\$2.74 MMBtu (see Appendix 4).

Natural gas consumption in domestic markets requires extensive transmission and distribution grids which, combined with the exploration and development costs, require substantial up-front investments. In 2005, the IEA projected that in the period 2005-10,

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<sup>620</sup> Owji, J. "Tahaghoghe Ahdafe San'ate Gaz ( Materialisation of Gas Industry's Objectives)." *Shana, NIOC official news website* (October 2012)

<sup>621</sup> Adibi, S, and Fesharaki, F. "The Iranian Gas Industry" In *Natural Gas Markets in the Middle East and North Africa*, 2011

exploration-development and transmission-distribution costs for production of 9 bcm of gas for future aggregate gas production of 109 bcm in Iran would reach US\$6 billion and US\$5.2 billion, respectively.<sup>622</sup> The IEA's estimation in 2005 showed that in the same period, the long-run average incremental cost (LRAIC) of gas supply would be US\$0.73 MMBtu at the city gate,<sup>623</sup> which, taking into account the additional distribution cost involved in reaching customers, was significantly higher than the pre-reform average gas price of US\$0.35 MMBtu.<sup>624</sup> However, as gas prices significantly increased in 2010 and reached to average US\$3 MMBtu in 2012, and considering the current growing rate of gas consumption in the household and commercial sectors and power generation plants, the investment for the development of the domestic market looks worthwhile. Also the cost of investments can be recouped in a shorter period of time, providing producers with greater incentives to invest. In fact, this was one of the subsidies reform plan's objectives that the substantial increase in prices of natural gas could provide the state-owned gas production and supply companies, i.e. NIOC and NIGC with revenues to enable them to fully recover their costs and to reinvest the capital for the development of the gas sector. However, as the entire revenue gained from the prices increase has been redistributed among the nation as monthly cash payments, NIOC and NIGC are still struggling to fully recover their production and supply costs.<sup>625</sup>

In terms of benefits of using gas in the domestic market, in 2009 a study conducted by Hossein Razavi, an energy economist in the World Bank, concluded that the domestic consumption of gas in sectors, where natural gas replaces LPG and oil fuels, offer high revenues, provided that there is a gas network in place or the gas volume is sufficiently

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<sup>622</sup> "World Energy Outlook." Middle East and North Africa Insights, International Energy Agency, 2005

<sup>623</sup> The cost of gas supply can be assessed at various points of the supply chain. The cost at the city gas includes investment and operating expenses relating to exploration and field development and the transmission expenses.

<sup>624</sup> "World Energy Outlook." Middle East and North Africa Insights, International Energy Agency, 2005

<sup>625</sup> *Iranian Students' News Agency (ISNA)*, "movafeghan va mokhalefan-e hadafmandi (Proponents and Opponents to Targeted Subsidies Act)." 7 May 2012

large to justify development of a network.<sup>626</sup> He presents Iran as an example where due to its extensive gas network which has been developed over the course of last 40 years (see Sections 2.6 and 2.7), the netback value of gas use in the domestic sector is very high. His estimation in 2009 - almost a year before price reform in Iran- showed that for example the netback value of gas consumption in the residential sector is US\$12 MMBtu. According to Razavi, the economic benefit or netback value of gas use is estimated based on the economic cost of the replaced fuel while adjustments are made to take account of differentials in many factors, including capital and operating costs, thermal efficiency, and cost of fuel processing and delivery.

In addition to the high netback value derived from consuming gas domestically, the social consideration pertinent to consuming gas in domestic markets plays an important role in allocation policies. In almost all energy-rich countries in the MENA region, equity and distributional issues put on silent economic efficiency arguments over optimal natural gas resource allocation.<sup>627</sup> Both in theory and practice, “trade-offs” exist between distributional and economic efficiency objectives for allocation of gas resources. Thus, it is not surprising that politicians and decision makers are under immense pressure to use their political power over gas pricing to meet distributional objectives.<sup>628</sup>

### **6.3.2. Natural Gas Re-injection into Oilfields**

In Iran, natural gas re-injection into oilfields started in the mid 1970s as a technical method to enhance the oilfields’ rate of recovery. Each oil reservoir usually experiences three production periods during its life time: the early rising production, the plateau production and the decline period. In Chapter 2 it was shown that, the majority of Iranian oil fields are now at the end of the plateau production or beginning of the decline

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<sup>626</sup> Razavi, H. "Natural Gas Pricing in Countries of the Middle East and North Africa." *The Energy Journal* 30, no. 3 (2009): 1-22, p.15

<sup>627</sup> Allsopp, C, and Stern. J., “The Future of Gas: What Are the Analytical Issues Relating to Pricing?”, In *The Price of Internationally Traded Gas*, 2012, p.19

<sup>628</sup> Ibid, p.19

period.<sup>629</sup> Its current oil recovery rate is approximately 20–25 percent, meaning that approximately 20–25 percent of oil is recovered, with 75–80 percent remaining in the fields until enhanced oil recovery (EOR) methods are implemented. Although, no studies are available on the secondary recovery rate for the country's oilfields, laboratory simulation shows an approximate rate of 5-7 percent.<sup>630</sup> Comparing to other EOR methods, such as water injection, NIOC's reservoir engineers have suggested that gas re-injection into fractured carbonate reservoirs– which account for approximately 90 percent of the country's oilfields– is technically and economically more efficient.<sup>631</sup>

Natural gas re-injection has been one of NIOC's natural gas supply priorities. NIOC has duly acknowledged the importance of increasing the natural gas re-injection in order to:

- Protect the rights of future generations in the hydrocarbon resources;
- Preserve the national wealth which plays an important role in long-term investments in oil sector and strengthening country's economic infrastructure; and
- Fulfil the country's dependence on revenues gained from crude oil exports.

**Table 6-1- Natural Gas Re-injection 1995-2012 (mcm/d)**

	1995	1998	2001	2004	2007	2010	2011	2012
<b>Planned Injection</b>	101	130	90	137	145	149	150	190
<b>Actual Injection</b>	54.6	67.4	75.4	80.0	87.7	88.4	112	100

**Source: Iran's Energy Balance (2011) & Petronet (2012)**

In the absence of a comprehensive analysis of the exact gas volume required for the re-injection, inconsistent views have been expressed by experts as to how much and for how long gas is needed for re-injection purposes. According to a study conducted by Ranani

<sup>629</sup> Bahramian, Y, and Alipour, M., 'Barasi Zarib Oft Tolid Dar Ayadin Naft Va Gas (Analysis of Depletion Rate of Iran's Oil and Gas Reservoirs)', *ekteshaf va Tolid*, no. 84, November 2011, p. 23

<sup>630</sup> Ranani, M, et.al. "Cost-Benefit of Various Natural Gas Consumption Options with Emphasis on Oil-Field Reinjection." *Tahghighat-e Eghtesadi*, Autumn 2008, no. 84 (2008): 119-50, p.123

<sup>631</sup> Jonoobi, P. "Lozome Tavajoh Bishtar Be Sarmaye-Gozari Dar Bakhshe Gaz-E Keshvar (Requiring More Investment in the Country's Gas Sector)." National Iranian Gas Company <http://www.nigc.ir/utills/getFile.aspx?Idn=5075> 2010

and et al in 2002, in order to compensate for losses resulting from the delay in natural gas re-injection and the decline in oilfields' pressure, 350 mcm p/d of gas is required to be re-injected in order to recover 45 billion barrels of oil throughout the production life of designated oilfields.<sup>632</sup> The Fourth Five-Year Development Plan, however, presented a different figure, requiring an average re-injection of 149 mcm p/d of gas which actually never materialised (see Table 6.1). The actual average reinjection by the end of the Fourth Development Plan, i.e. 2009, was 88.40 mcm p/d which was almost half the volume designated by the Plan. In the Fifth Five-Year Development Plan, the regulator once again put a great emphasis on the importance of enhancing the oilfields' rate of recovery and obliged the Government to increase the recovery rate by 1 percent during the implementation period of the Plan, i.e. 2010-2015. As a result, a consortium consisting of Ministries of Petroleum and Science was established in March 2012 in order to conduct studies and implement solutions for the enhancement of the recovery rate of the oil reservoirs.<sup>633</sup> As the Consortium was established two years after the beginning of the Plan, and during the last one year since its establishment it has not done any major tasks, it is unlikely that it can make effective contributions to solving re-injection challenges by the end of the Fifth Development Plan in 2015.

#### **6.3.2.1. Economic and Political Importance of Natural Gas Re-injection**

Iran's economy is highly dependent on oil revenues and studies show that the crude oil consumption, both domestically and internationally, has had an upward trend during the last few years (with minor volatility during economic recession), strengthening the prospects for increasing the flow of revenue, particularly in the light of high oil prices.<sup>634</sup> Since the 1970s, Iran's oil production rate witnessed many fluctuations; between 1976-

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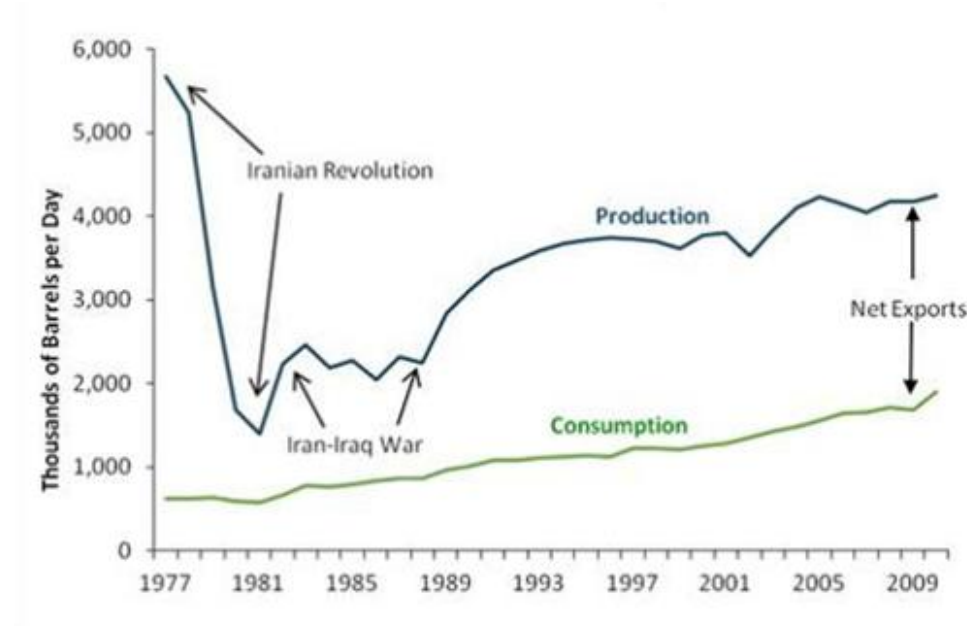
<sup>632</sup> Ranani, M, et.al. "Cost-Benefit of Various Natural Gas Consumption Options with Emphasis on Oil-Field Reinjection." 2008,p.121

<sup>633</sup> Khandan, M. "Ezdiad Bardasht, Challensh-Ha, Forsat-Ha and Zaroorat-Ha (Recovery Rate, Challenges, Opportunities and Necessities)." *Ektehaf va Tolid (Exploration and Production)* July 2012, no. 91 (July 2012), p.2

<sup>634</sup> Esfahani, H, et.al., 'Oil Exports and the Iranian Economy', Faculty of Economics, University of Cambridge, July 2012

77, its average oil production exceeded 5.5 million bbl/d with maximum production of more than 6 million bbl/d.<sup>635</sup> But, since the 1979 Revolution, a combination of war, limited investments, international sanctions and a high rate of natural decline in Iran's mature oilfields have prevented the return to those production levels. While the average production capacity of each of Iran's 300 oil wells, drilled before the Revolution, was around 25 thousand bbl/d, after the Revolution and despite the coming on stream of more than 1000 oil wells, there was a dramatic decline in oil production: around 3 thousand bbl/d per well by 1998. According to some reports, an estimated 300,000-600,000 bbl/d of crude production is lost annually due to decline in the mature oilfields.<sup>636</sup>

**Figure 6.1- The Iranian Total Oil Production and Consumption (1977-2010)**



**Source: U.S. Energy Information Administration (2011)**

Although since the early 2000s Iran has maintained its oil production capacity as a result of coming on stream of major South Pars phases, which has increased the country's condensate production, the gas re-injection is needed to prevent further reduction in

<sup>635</sup> Iran's average production in the period 2010-11 was about 3.5 million bbl/d. In September 2012, the country's production rate plunged to its lowest in the last 25 years, producing only 2.6 million bbl/d. "Growing impact of emerging economies on the oil market," In. *Monthly Oil Market Report*: OPEC, August 2012

<sup>636</sup> "Country Analysis Briefs: Iran ". Energy Information Agency, the U.S. Department of Energy <http://www.eia.gov/countries/cab.cfm?fips=IR> February 2012

oilfields.<sup>637</sup> Despite the availability of huge natural gas resources, country's ambitious development policies both in domestic and international markets and the resulting growing demand have put great strain on natural gas supply for re-injection purposes.<sup>638</sup>

In 2009, the Parliament Research Centre published a report, concluding that at the current depletion rate of oilfields, Iran will become an oil importer by 2015.<sup>639</sup> In addition to the economic return, the oil export is considered a 'strategic weapon' which plays an effective role in the favour of Iran's national security and a source of power for the leaders to maintain their position in international competitions (see section 6.2).<sup>640</sup> Therefore, threats to its position as a key oil producer and exporter may substantially weaken the country's energy diplomacy power.<sup>641</sup> The loss of its second rank in OPEC to Iraq in January 2013 caused many criticisms regarding the Iranian Government's failure to effectively manage the impact of international sanctions. Therefore, natural gas re-injection is the only remaining option to maintain oilfields production rate.

According to NIGC, an estimated volume of 70 to 110 cm of gas is required to be re-injected into the oilfields to add one barrel of oil to a reservoir production capacity.<sup>642</sup> If the price of Iran's natural gas export to Turkey in 2012 which was US\$500 thousand cubic meter is set as a benchmark, the export of an average gas volume which is required for production of one barrel of oil, i.e. 90 cm would yield average revenue of US\$45 cm. However, if re-injected into the oilfields, these volumes can generate income of US\$100 at current average oil prices. In other words, the reinjection of average 90 cm of gas yields US\$100 per barrel worth of revenue which, even after deducting re-injection costs,

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<sup>637</sup> Stern, R. "The Iranian Petroleum Crisis and United States National Security." *International Journal of Economic Sciences* 104, no. 1 (2007): 377-82; Mitchell, J, et.al. "Resource Depletion, Dependence and Development: Iran." London: Chatham House, April 2008

<sup>638</sup> "Country Analysis Briefs: Iran ". Energy Information Agency, the U.S. Department of Energy <http://www.eia.gov/countries/cab.cfm?fips=IR> February 2012

<sup>639</sup> "Baresi Oft Tolide Makhazene Naftie Keshvar Va Manafe Melli (Analysis of Depletion Rate of Oil Fields' Production and Country's National Interest)." Research Centre of Majlis, 2009

<sup>640</sup> Azadi, A. K, and Yarmohammad, M.H., 'Analysis of Iran's Crude Oil Export Future Capacity', *Energy Policy* 2011, no. 39 (2011): 3316-26, p. 3317

<sup>641</sup> *ibid*

<sup>642</sup> Ranani, M, et.al. "Cost-Benefit of Various Natural Gas Consumption Options with Emphasis on Oil-Field Reinjection.", 2008



is more economic and profitable than exporting gas (although profitability also depends on investment requirements of these options which are discussed below).<sup>643</sup>

The statistics over Iran's oilfield annual decline rate are varied. While NIOC reports an average annual production decline of 4 percent,<sup>1</sup> the U.S. Energy Information Administration (EIA) has suggested a significantly higher average depletion rate of 10 percent.<sup>644</sup> A calculation based on NIOC average depletion rate of 4 percent presents an optimistic scenario where Iran loses 152 thousand bbl/d of its production capacity per year causing an aggregate export revenue loss of around US\$5.5 billion per annum.<sup>645</sup> Based on the pessimistic scenario of the depletion rate of 10 percent, the aggregate production loss will be 380 thousand bbl/d, causing an annual export revenue reduction of US\$13.8 billion. Additionally, as the country's domestic oil consumption has an average annual growth rate of 5 percent (equivalent to 2 percent of the country's current oil production), and taking into account the 4-10 percent decline in production mentioned above, an average 76 thousand bbl/d of the country's production will be deducted from its export capacity per annum which combined with the losses resulting from the depletion rate, this can be translated to losing around minimum US\$8.3 billion and maximum US\$16.6 billion of Government's annual revenue. In a comparison of the reinjection and gas export options, it is important to take into account the initial investment cost and operation and maintenance expenses. According to NIOC, the largest gas re-injection project in the Middle East, namely Agha-Jari oilfield re-injection, only cost US\$300 million which is significantly less than the cost of export projects, whether pipeline or LNG (see the next Section).<sup>646</sup>

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<sup>643</sup> Jonoobi, P. "Requiring More Investment in the Country's Gas Sector ( Lozome Tavajoh Bishtar Be Sarmaye-Gozari Dar Bakhsh-e Gaz-e Keshvar)." National Iranian Gas Company [www.nigc.ir/utis/getFile.aspx?Idn=5075](http://www.nigc.ir/utis/getFile.aspx?Idn=5075) , 2010

<sup>644</sup> Karimi Zarchi, M. "Analysis of Optimal Allocation of Iran's Gas Resources with a Particular Focus on Reinjection and Export" *Ektehaf va Tolid* no. 77 (March 2010); "Country Analysis Briefs: Iran ". Energy Information Agency, the U.S. Department of Energy <http://www.eia.gov/countries/cab.cfm?fips=IR> February 2012

<sup>645</sup> Mosleh, K. *Optimal Usage of Iran's Natural Gas Resources*: Majlis Research Centre 1387 (2009)

<sup>646</sup> "Inauguration of the Largest Oilfield Gas Re-Injection Project ( Bahre Bardai Az Bozorgtarin

### 6.3.3. Natural Gas Export

#### 6.3.3.1. Export through Pipeline and LNG

Export projects particularly LNG are extremely costly. Capital-intensive, highly specialised equipment is involved in the processing and transportation of liquefied natural gas. Large LNG projects need long-term contracts in order to secure finance for building the liquefaction and regasification terminals and specialist and expensive tankers to ship LNG cargoes across the markets. Costs have been increasing steeply in the last few years, making it even harder to raise the investment. In the 1980s building a liquefaction plant cost around US\$350 per tonne of LNG a year. By the 2000s the figure, in current terms, fell to US\$200 as technology improved.<sup>647</sup> However, in 2013, some LNG facilities are estimated to cost as much as US\$3,200 per tonne.<sup>648</sup> One reason is that the price of steel, which LNG projects use in large quantities, has increased dramatically during last few years. In 2005, the total investment for building an LNG plant in Iran was estimated around US\$1.5 to US\$2.5 billion, depending on the market needs and number of ships required. Today, it can cost the country as much as US\$15-20 billion to build a 10 Mt/yr LNG plant.<sup>649</sup>

Development of substantial export infrastructure, in the light of current changing dynamics of regional and international gas markets, and uncertainties among investors over natural gas market prices, is not easy and requires an in-depth analysis of the long-term viability of such projects, particularly for a country which has to fulfil domestic market needs. The discovery and development of shale gas in the U.S. has changed many market equations; it has created a “glut of gas supply” in the North American market,

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Projeye Tazrigh Gaz Khavarmianeh)." National Iranian Oil Company  
<http://ekteshaf.nioc.ir/55/pdf/55-04.pdf> , 2011

<sup>647</sup> *Economist*, 'A Liquid Market', (14 July 2012): <http://www.economist.com/node/21558456>

<sup>648</sup> According to the IEA, the construction cost of the Australian Pluto LNG project reached US\$3,256 per tonnes of production. The cost for construction of another Australian LNG plant, i.e. Ichthys, is estimated to increase even further, reaching US\$4,048. "Developing a natural gas trading hub in Asia: Obstacles and opportunities." International Energy Agency, 2013

<sup>649</sup> Kassaizadeh, S. R. "Zanjireyeh Tolid LNG (LNG Production Chain)." *Iranian LNG Conference*. Tehran, 2011

causing a plunge in gas prices and diversion of large volumes of gas to Asia-Pacific markets.<sup>650</sup> As predicted by the IEA, the unconventional gas can put pressure on conventional gas suppliers and on traditional oil-linked pricing mechanisms for gas “by diversifying sources of supply, tempering demand for import (as in China) and fostering the emergence of new exporting countries (as in the United States).”<sup>651</sup> This phenomenon has posed difficulties for leading LNG suppliers, such as Qatar, and forced them to look for alternative markets for the gas which is no longer profitable to deliver to the U.S. market and conclude long-term contracts with Asian markets which, in the light of availability of alternative suppliers (Australia, North America and East Africa), are unsurprisingly reluctant to accept previous JCC-linked prices.<sup>652</sup> Therefore, more price flexibility may be expected from major gas exporters, particularly LNG sellers, with years of experience and strong positions in international markets. Coping with such conditions and making swift shifts between markets might be challenging for a country like Iran, which has no experience in LNG markets, and limited (relatively unsuccessful) gas pipeline exports.

The construction and financing of export pipelines can be as expensive and challenging as LNG projects. In pipeline projects, as the amount of investment can be very high, a secure buyer should exist and be willing to sign a long-term sale and purchase agreement. The cost of project varies, depending on the production and transmission cost, the length of the pipeline, its capacity, transit countries’ charges and pipeline route specifications. The cost for construction of Iran’s export Peace Pipeline to Pakistan and India was initially estimated around US\$4.5 billion, but as the construction delayed for several years, the cost is expected to reach US\$7 billion.<sup>653</sup> Another example is Iran’s latest

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<sup>650</sup> "World Energy Outlook." International Energy Agency, 2012

<sup>651</sup> "World Energy Outlook." International Energy Agency, 2012

<sup>652</sup> Darbouche, H. "The Pricing of Internationally-Traded Gas in Mena and Sub-Saharan Africa" In *The Pricing of Internationally Traded Gas*, 2012

<sup>653</sup> *National Iranian Gas Company*, "Saderate Gaz (Gas Export).", 27 Day 1390 (07 February 2012)

planned export project to Iraq and Syria which, according to NIGC, is estimated to cost around US\$10 billion.<sup>654</sup>

As shown in Section 6.2, the Iranian Government has essentially pursued political rather than commercial objectives from establishing long-term regional and international gas trade relations. After the Iran-Iraq war, the reconstruction challenges and the requirement for accelerating the social and economic development in order to meet a young population's expectations, pushed the Iranian politicians towards expansion of foreign relations emphasising on expanding trade and attracting investments for the development of mutually beneficial state-to-state relations and integration into the global economy. In the field of energy, this was translated into recognising "the need for regional cooperation, not because of any increasing volume and intensity of interdependent relations among regional neighbours [...], but because of the artificially low level of such interdependence."<sup>655</sup> Regional and international gas trade was perceived by the Iranian authority as a means of diplomacy to leverage through international political challenges, particularly international sanctions.

Today, however, in the current political and economic conditions surrounding Iran's petroleum sector, even the political rationale behind gas export policies is relatively weak. First of all, Iran's gas export initiative has not been successful in meeting the country's geopolitical objectives. In the case of Peace Pipeline, for example, besides the prolonged political tension between India and Pakistan, the countries seem to be reluctant to embrace the economic and political risks of establishing long-term gas trade relations with Iran, in the light of increasing international sanctions, particularly from the U.S. Government. Even the most promising export project, namely Iran-Turkey export, is under threat from E.U. sanctions on import of Iranian gas, in addition to numerous disputes over the volume and prices of the exported gas (see Section 2.9). Additionally,

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<sup>654</sup> *ibid*

<sup>655</sup> Herzig, E. "Regionalism, Iran and Central Asia." *International Affairs* 80, no. 3 (2004): 503-17, p. 503-17

one should not expect significant economic and political benefits from markets of countries such as Armenia and Nakhchivan with limited expansion potential and also considered to be under the influence of Russia.<sup>656</sup>

Furthermore, the development of Iran's presence in international markets may be hard hit by, first of all, the active presence of competitors, such as Russia and Qatar, with a substantial share of international gas trade,<sup>657</sup> and secondly opposition by Russia which clearly benefits from excluding Iran from becoming a major gas supplier to European markets. The policy of developing gas exports as a means for strengthening the country's diplomacy and political leverage could have been effective, had Iran managed to successfully accomplish its gas export projects planned in the mid-1990s and establish itself as a strong market player. Back then, Iran's current major rivals, namely Russia and Qatar were in much less strong positions. The break-up of the former Soviet Union in the early 1990s caused "immediate and continuing problems" in Russian gas trade where refusal and/or inability to pay resulted in the suppliers' huge debts and periodic cutbacks.<sup>658</sup> Qatar was also a new entrant where the development of its natural gas resources faced many problems, including the political challenges in the ruling family in the mid 1990s, and the second Gulf war which interrupted many development projects in the region, as well as technical and infrastructure problems. Therefore, had Iran moved ahead with its export market expansion policies of 1990s, it would by the 2010s have been in a stronger position in international gas trade, while also being potentially able to use its supply power as a means of political leverage. The policy, however, never materialised as a result of not just international sanctions but also domestic issues as reviewed in Chapters 3,4 and 5. Today, finding finance and investors for development of

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<sup>656</sup> Rahimi, Gh. "Olaviat bazarhaye saderat baraye gaze Iran (Prioritising Export Markets for Iran's Natural Gas)." *Iran Energy* 10, no. 26, Mordad 1385 (August 2006), p.41

<sup>657</sup> In 2011, Russia and Qatar exported 221.4 and 121.8 bcm of gas, respectively. British Petroleum, 'British Petroleum Statistical Review of World Energy', 2012

<sup>658</sup> Stern, J. *The Future of Russian Gas and Gazprom*: Oxford Institute for Energy Studies, 2005

Iranian pipeline and LNG projects in current conditions is almost impossible; so is access to required technologies which are subject to strict U.S. and EU sanctions.<sup>659</sup>

### **6.3.3.2. Exports of Natural Gas Added-Value Products**

In the petroleum resource rich countries of the MENA region, using oil and gas as an input factor to develop value-chains is considered of great importance as they are expected to promote industrialisation and diversification.<sup>660</sup> As will be explained below, using natural gas as a feedstock for development of petrochemical and other added-value products have been rigorously pursued by the Iranian Government as a strong means for sustainable and independent economic growth.

#### **6.3.3.2.1. Petrochemical Industry**

Iran has 10 petrochemical plants across the country, 2 of which are located in Special Economic Zones. Development and operation of petrochemical facilities in Iran is assigned to the National Iranian Petrochemical Company (NIPC) which was founded in 1964 and began its activities by operating a small fertiliser plant. In 2010, it was the second largest producer and exporter of petrochemical products in the Middle East.<sup>661</sup>

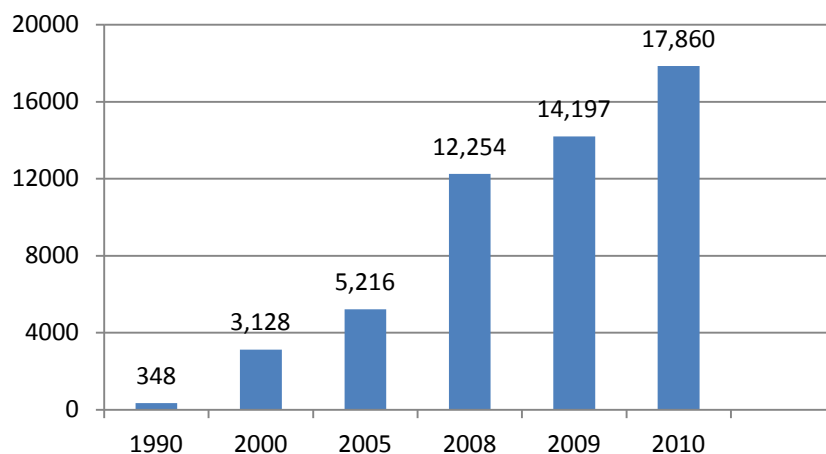
With start of the South Pars gas field development in 2001, NIPC initiated planning for large gas-based petrochemicals plants, such as Amir Kabir Petrochemical Company in 2006.

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<sup>659</sup> Ghorban, N. "The Impact of Recent Developments on Iran Gas Export Project to Europe." In *4th South East Europe Energy Dialogue*. Thessaloniki, Greece, 2011.

<sup>660</sup> Fattouh, B, and El-Katiri, L. "Energy and Arab Economic Development", *Arab Human Development Report*, 2013

<sup>661</sup> "Annual Report", *National Iranian Petrochemical Company*, 2010

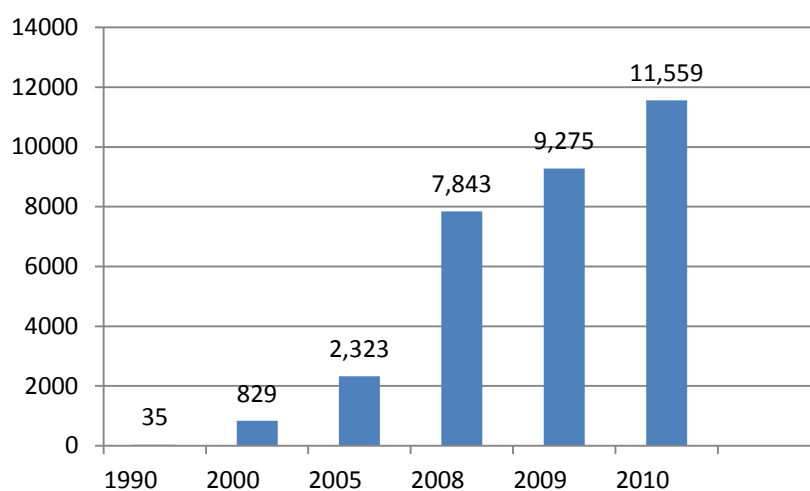
**Figure 6.2- Petrochemical Export (1000 Tonnes)**

**Source: NIPC Annual Report (2010)**

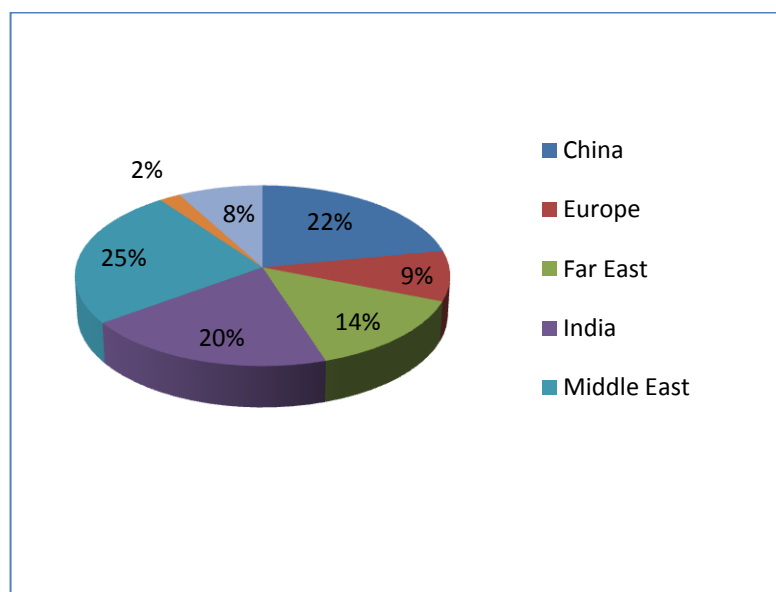
During the last few years, the Ahmadinejad administration with its inward looking approach,<sup>662</sup> further encouraged expansion of the petrochemical industry. In 2010, Iran's petrochemical industry's nominal production capacity reached 51.1 million tonnes. Its final production capacity was 28.392 million tonnes, from which 10.5 thousand tonnes was consumed domestically (equivalent to US\$6.870 million) and 17.860 thousand tonnes were exported accumulating an income of US\$11.5 billion.<sup>663</sup> (see Figures 6.2. and 6.3) The export volume shows 26 percent increase in quantity and 25 percent increase of value compared to 2009.

<sup>662</sup> See Chapter 3.

<sup>663</sup> "Annual Report", *National Iranian Petrochemical Company*, 2010

**Figure 6.3- Petrochemical Export (US\$ million)**

Source: NIPC Annual Report (2010)

**Figure 6.4- Value Export Market (2010)**

Source: NIPC Annual Report (2010)

The cost of construction of petrochemical plants, depending on the location, product's specifications and plants capacity, varies between US\$500 million and US\$1 billion. For example, the development of the Ilam Petrochemical Complex which started in 2010 and



is expected to come on stream in early 2014 is estimated to cost around US\$1 billion.<sup>664</sup>

The plant's production capacity is 700 thousand tonnes different grades of High Density Polyethylene (HDPE).

Development of petrochemical industry in a country like Iran where there are low-price, abundant feedstock and large population, can significantly contribute to the overall development of the economy. By a way of comparison with export projects, Iran consumed around 17 percent of 143bcm of its total gas consumption in 2011, equivalent to 24bcm, in the petrochemical industry yielding around US\$12 billion of revenue whereas export of 8.4 bcm of gas generated around US\$3 billion worth of revenue. More importantly, according to NIPC's annual report in 2010, 25 thousand people are employed in 9 petrochemical companies only in Assaluyeh region which is one of the least-developed parts of the country.<sup>665</sup>

The Iranian petrochemical industry is not, however, an exception to the current trend of postponement and/or cancellation of petroleum projects. The lack of finance and technologies due to international sanctions have placed challenges in the materialisation of expansive policies of Iran in the petrochemical industry, causing significant delays in bringing production capacities on stream.

#### **6.3.3.2.2. Gas-to-Liquids (GTL)**

Gas-to-liquids (GTL) projects have received special attention from a broad range of Iranian politicians and energy specialists.<sup>666</sup> GTL process is a process for converting natural gas into synthetic oil, which can then be further processed into fuels and other hydrocarbon-based products. The first GTL plant in Iran was planned to be built by Shell in the early 2000s; however, as a result of disagreement over the contractual terms and

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<sup>664</sup> Other plants, which are at the early stages of their construction, are Lordegan and Gachsaran, each with estimated capital cost of around US\$ 900 million and US\$850 million, respectively. *Shana*, 'Construction of 8 New Petrochemical Plants', National Iranian Oil Company, 19 Shahrivar 1391 (9 September 2012)

<sup>665</sup> "Annual Report", *National Iranian Petrochemical Company*, 2010

<sup>666</sup> For example, see Ghorban, N. "Chera LNG? (Why LNG?)", *Iran Economics* (4th December 2010)

political and economic pressures resulting from international sanctions, the project never materialised. Later on when Shell decided to carry out the project in Qatar (known as Pearl GTL), its cost rose substantially higher than the initial estimation, i.e. from US\$5 billion to around US\$18 billion,<sup>667</sup> casting significant doubt over economic feasibility of GTL projects whether in Qatar and elsewhere. Iran's GTL capacity has not gone beyond a small-scale, pilot GTL production plant which was inaugurated in Tehran in December 2012. But, as there are serious uncertainties over GTL plants' investment and construction cost, and considering the fact that Iran's access to the required technologies is strictly limited, it is highly unlikely that Iran can develop large-scale GTL plants in near future.

#### **6.4. Final Remarks**

Iran has ambitious plans to develop its natural gas markets both domestically and internationally. The country's production capacity, however, can hardly meet its domestic consumption and re-injection needs, leaving no surplus for exports. Iran's natural gas allocation policies have been subject to many discussions both among Iranian politicians and energy experts. However, no in-depth economic study has been conducted on the subject matter to draw a clear conclusion over the economic return from each of the gas allocation options. While this Chapter acknowledged that such analysis is beyond the scope of this work and not possible due to lack of data, attempts were made to shed some light on the challenges and opportunities for allocating the Iranian gas to different markets.

Iran's gas export policy has been mostly encouraged by political incentives rather than economic objectives. Establishment of regional and international gas trade relations were perceived by politicians as a diplomatic and political means to strengthen Iran's geopolitical position. A review of Iran's gas export projects, however, shows that the

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<sup>667</sup> "Shell overview", 2011 <http://www.shell.com/global/aboutshell/our-strategy/major-projects-2/pearl/overview.html> ; Evans, D., 'Pearl GTL Set for Big Payback', *Upstream* (11 March 2008)

country has failed to achieve its political objectives through gas exports and also failed to achieve significant economic returns in relation to other utilisation options. The situation could have been different, had Iran successfully implemented its gas export projects proposed and planned in the mid-1990s. Back then, Russia and Qatar- Iran's main competitors- were amidst domestic and international political turmoil which placed them in a potentially difficult situation similar to Iran but for different reasons. In the mid-1990s Iran, recovering from the war with Iraq and aiming to open up its petroleum sector to foreign investments in addition to owning some of the largest gas reserves in the world while being geopolitically well-situated, was in a strong position to emerge as an influential player in the international gas markets. However, exports never materialised principally as a result of U.S. and international sanctions.

Today, when discussing the prospects for Iran's gas exports, one may carefully examine the current surrounding political and economic conditions affecting the country's economy as a whole and its petroleum sector as a part. Iran's title of second largest gas owner in the world has made many "illusional" about the country's export capabilities.<sup>668</sup> Setting strategic policies requires a fact-based understanding of Iran's natural gas industry. Lack of reliable data, transparency and the disconnection between upstream activity and downstream objectives makes almost impossible any assessment of the cost and potential for development.

Export facilities require huge capital investment, the access to which is extremely limited for Iran in the light of international sanctions. In addition, speedy and efficient development of resources requires up-to-date technologies, which is not readily available to the country due to the same challenges. Additionally, the present legal framework governing the participation of international oil companies is not conducive for such speedy development of gas resources. Therefore, in 2013, due to the current limited production capacity, a growing domestic market and rising oil prices on which the

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<sup>668</sup> Hassantash, G.H. "Iran's Gas Export: From Illusion to Plan." In *Mosalas*, edited by Kaveh Karegar, 2006 (1385), p. 50

Government's budget is highly dependent, the re-injection of gas into oilfields should be the Government's top priority. As Hassantash, one of the Iranian senior energy analysts puts it, "re-injection of gas today is a guarantee for export of oil tomorrow".<sup>669</sup>

Allocation of natural gas to the domestic market also has significant social and economic returns. According to Razavi, the benefit of using gas in the domestic market is "substantially above the net gain from gas exports."<sup>670</sup> He argues that in countries like Iran where the national grid is extensively developed, the economic return in using gas in the domestic markets is substantially higher than exports.<sup>671</sup> The argument is also in line with Dehghani's work which concludes that, both from "expected value" and "risk analysis" point of view, the priorities for natural gas resource allocation should be: 1) re-injection projects, 2) petrochemical projects, and 3) export markets.<sup>672</sup>

As mentioned in the introduction, all these studies have limitations as the examination of many variables has not been possible due to lack of data. But it was important to address the allocation challenges in the Iranian natural gas industry and try to shed some light on the complex debate over allocation of its natural gas resources to export or domestic markets based on available data and rough estimations. To borrow from Robert Mabro, "*approximate results are better than no results at all*".<sup>673</sup>

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<sup>669</sup> Karimi Zarchi, M. "Analysis of Optimal Allocation of Iran's Gas Resources with a Particular Focus on Reinjection and Export " *Ekteshaf va Tolid* no. 77 (March 2010 (Esfand 1389)), p. 15

<sup>670</sup> Razavi, H. "Natural Gas Pricing in Countries of the Middle East and North Africa, 2009, p. 16

<sup>671</sup> Netback value of gas use in residential sector and gas for re-injection is estimated about US\$12 and US\$11 MMBtu, respectively, as oppose to around US\$3 MMBtu for gas export. Razavi, H. "Natural Gas Pricing in Countries of the Middle East and North Africa, 2009, p.15

<sup>672</sup> Dehghani, T., *Model Hadeaxar Sazi Manafe Eghtesadi Hasel AZakhayer Gazi Iran (a Model for Maximisation of Economic Benefits Resulting from Iran's Natural Gas Resources)*. 2007

<sup>673</sup> Darbouche, H, and Mabro. R. "Egypt's Natural Gas Market: So Far So Good, but Where to Next?" In *Natural Gas Markets in the Middle East and North Africa*, 2011

## **Part Three- Conclusion**

## **7. Chapter 7- Summary, Conclusion and Future Research**

### **7.1. Summary**

In this thesis, many challenges were identified which have prevented Iran from becoming a major player in the international gas trade. These challenges, and how they have affected the development of the Iranian natural gas industry, are presented below as findings of this research.

Chapter 2 presented a general background to Iran's natural gas industry, including its organisation, domestic market, and export projects. It reviewed the industry's history both before and after the Revolution when different Governments adopted contradictory policies for the development of the country's natural gas industry. While in the 1970s, there was a reasonable degree of confidence that Iran could become a major player in international gas markets, after the Revolution, hopes for materialisation of this goal vanished and since then Iranian gas export projects have remained undeveloped. However, the domestic market has shown astonishingly rapid growth since the Revolution, although its huge and growing size proved to be a challenging problem. As discussed in Chapter 2, the majority of Iran's gas production and export projects have been either cancelled or substantially delayed, raising the question of why Iran, despite its enormous gas resources, has not been successful in fulfilling its export potential. In the following four Chapters, attempts were made to answer this question by examining multitude challenges, including political, legal and economic and how these have impacted the development of different aspects of the natural gas industry.

In Chapter 3, the political challenges hindering the expansion of the Iranian gas sector were discussed. Central to this Chapter was the discussion of international sanctions and politicisation of the Iranian petroleum industry in constraining the country's development of its petroleum sector. Chapter 3 showed the impact of the progressive U.S. unilateral and international sanctions which have severely limited Iran's access to international financial institutions and prohibited foreign investors from participating in the

development of its petroleum sector. In addition to international sanctions, the politicisation inherent in the institutional structure of the petroleum sector has posed serious challenges to substantial development of the Iranian natural gas sector. Iran's historical concern about the exploitive nature of foreign influence has left a deep, and seemingly permanent negative impact on the policy making process. The consequent lack of trust has encouraged constant intervention from a multitude of different bodies in the petroleum sector's decision-making, with the result that it is almost impossible to understand where ultimate decision making responsibility lies in the sector. This Chapter concluded that international political and economic pressures are the fundamental reasons behind the country's failure to develop its gas exports, and unless international sanctions are eased and the country's political and diplomatic relations with the international community are improved, it is hard to see any progress, and with perhaps the possibility of further deterioration of this situation.

In Chapter 4, the legal and contractual regime in the Iranian petroleum sector was assessed in order to evaluate the attractiveness of the country's investment framework. The study showed that, despite criticisms of the Iranian buy-back contracts, prior to intensification of international sanctions, the country had been relatively successful in the conclusion of substantial investment contracts with major IOCs. Although a large number of these contracts either never materialised or were cancelled/postponed, mainly as a result of international sanctions, the research reviewed the evolutionary trend of buyback contracts since their inception and the Iranian Government's willingness to modify their legal and fiscal terms and adopt more favourable clauses to promote foreign investment.

This research rejected the proposition that Iran should adopt or transplant the legal and contractual frameworks of successful gas producing countries, such as Qatar, in order to be in a better position to attract foreign capital and circumvent international sanctions. One cannot doubt the success of for example the Qatari investment model in development of its gas industry and export, but the solution of importing and transplanting such a

model to the Iranian investment and legal system is highly unlikely to be successful in the light of the country's historical and cultural background. This research suggested that more important than changing the legal and contractual framework, is the restructuring of governance institutions in order to ensure the implementation and enforcement of contractual commitments between parties. It also demonstrated how lack of strong and transparent governance institutions has deterred investors and diminished their confidence in making substantial investments in capital-intensive sectors, including the gas sector.

In Chapter 5, the issue of energy subsidies in Iran and the impact of low gas prices on the development of the natural gas sector were discussed. In this Chapter, energy subsidies were introduced as inefficient, socially regressive and environmentally harmful measures which Governments usually use to redistribute wealth among their populations. The initiative to reform energy subsidies in 2010 was badly affected by the Government's mistakes in its implementation, and the most stringent round of international sanctions against the country, leaving Iran in an unprecedentedly difficult political and economic situation. In this Chapter some of the shortcomings of the subsidies reform plan were also identified, specifically: universal citizen eligibility for monthly cash payments; lack of a clear time framework for different stages of the reform including for payments of cash hand-outs; the implementation of the plan in a hostile international environment; and lack of transparency in the reform process. It was also shown that increasing inflation diminished the value of the Government's mitigation measures and increased the risk of subsidies returning to the energy sector and the economy as a whole. In addition, the substantial increase in gas prices did not have a significant downward effect on gas demand, mainly as a result of the Government's domestic market expansion policy and continued utilisation of old and inefficient technologies and capital stock in the industrial sector, in particular, power generation plants. With regards to reinvesting the capital gained from price increases for development of the energy sector (as had been planned initially), the Government, while failing to pay back the 30 percent share of the cash



handouts due to the industries, including the natural gas sector, spent the energy sector's allocated funds in the annual budgets of 2011 and 2012 on cash payments to the nation. This Chapter, therefore, concluded that subsidy reform in Iran not only has failed to improve the natural gas industry's situation, it has placed further pressure on NIOC's budget as a portion of the fund allocated for the development purposes has been distributing to the population as a part of Government's mitigation measures.

Chapter 6 addressed the prolonged debate among Iranian politicians over the role of exports in Iran's natural gas allocation policy. The debate centres on the optimal allocation of exhaustible resources to options which yield the highest economic return for the country. This Chapter also discussed the importance of 'welfare maximisation' in resources allocation, and showed how social considerations and distributional impacts inevitably offer challenges to economic analysis of the optimal allocation of natural resources. In this Chapter, allocation of gas to domestic markets, oilfields re-injection, and exports were reviewed and an attempt was made – within the limitations of available information and data- to examine the economic and political returns from each of these options. It concluded that those Iranian politicians which favour exports do so predominately to pursue political influence in the international arena, and their views on exports and domestic utilisation are not based on an economic analysis of costs and benefits of these options. It also considered the issue of oilfield re-injection and demonstrated that, in the context of oil prices in excess of US\$100/bbl, the revenue generated from this option is significantly greater than that from gas exports, particularly when taking into account the initial investment and operational costs which are considerably lower for re-injection projects. Although, due to the lack of data and the limited scope of this study, these comparisons lack thorough analysis of the many variables required for a full decision making analysis of the allocation of gas resources, it was important to illustrate these allocation challenges, which clearly differentiate Iran

from gas exporting countries with small population and limited oil production potential, such as Qatar.

## **7.2. Concluding Remarks**

I now return to the central research questions on which this thesis is based (see page 17):

### **1. Will Iran become a major exporter of gas to global markets over the next 10-20 years?**

The answer to this primary thesis question is certainly not for 10, and probably not for 20 years. This is due to the existence or continuation of existence of several challenges, which throughout the course of this research, were identified and examined as major factors preventing Iran from becoming a major gas exporter. These challenges constitute the answer to the second thesis question, i.e.:

### **2. What are the major challenges which have prevented Iran from becoming a major gas exporter?**

and include:

- Politicisation of the petroleum industry, resulting in mismanagement and absence of a solid strategy planning;
- International sanctions and lack of investment, financing and technology;
- Lack of an attractive legal and fiscal regime and poor governance institutions;
- Growing domestic gas market (including reinjection into oil fields) and lack of energy efficient capital stock.

An important part of the immediate answer to the question of whether Iran can become a major exporter depends on the international political situation surrounding the country's relationships with the international community, particularly the U.S. As reviewed in Chapter 3, the fundamental challenge to the integration of Iranian natural gas into global markets is the imposition of progressive political and economic sanctions against the country as a result of its nuclear activities. Iran's huge natural gas resources and its

unique geopolitical position provide the country with substantial potential for export of its natural gas not only to regional but also to international markets. However, the consequence of the political situation in the early 2010s is that despite its massive potential, Iran is highly unlikely to become a major contributor to the international gas trade for many years. Even if international sanctions are lifted and favourable fiscal and contractual terms are offered to IOCs for development of the country's energy sector, it would take Iran decades to develop its export infrastructure to the point where it could become a major gas exporter. By a way of comparison, the development of the natural gas sector in Qatar is a good example of the time horizon required for substantial gas exports when taking into account the attraction of foreign investment and technologies, the construction of the required infrastructure and marketing.

After several interruptions to develop its natural gas resources since the discovery of the North Field in the early 1970s, Qatar started phase one of the North Field development in the early 1990s. The Qatari leadership pursued a strategy of global LNG export markets and invested substantially in the natural gas sector. Adopting the fastest export development programme in the world,<sup>674</sup> the country has made remarkable progress as an LNG exporter since the first cargo was loaded in the end of 1996. The country's annual LNG export capacity reached 102.6 bcm in 2011, over three times the capacity of Malaysia, its closest competitor.<sup>675</sup> The emergence of Qatar as the world's largest LNG exporter required 20 years from the start of export-oriented gas field development, and 16 years from the first cargo of LNG. Strong leadership and political cooperation ensured key decisions being taken and implemented quickly.<sup>676</sup> The Government practically utilised all the resources available for fast and effective development of its natural gas resources, including partnering with international oil companies which were major

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<sup>674</sup> Flower, A., "LNG in Qatar" In *Natural Gas Markets in the Middle East and North Africa*, 343-85: Oxford University Press, 2011

<sup>675</sup> In 2011, Malaysia exported 33.3 bcm LNG. British Petroleum, 'British Petroleum Statistical Review of World Energy', 2012

<sup>676</sup> Flower, A., "LNG in Qatar" In *Natural Gas Markets in the Middle East and North Africa*, 343-85: Oxford University Press, 2011, p.381

players in the LNG industry and could bring expertise and experience, adapting project structures to make them more attractive for foreign investors and changing the fiscal regime to improve the economics and encourage investment.<sup>677</sup> As reviewed in this thesis, these are important attributes that have not been, and are unlikely to be, seen in Iran.

Therefore, taking the Qatari gas development as a successful model, it would take Iran 15-20 years to become a major gas exporter, following the lifting of international sanctions, and assuming that the country is prepared to offer better contractual and fiscal terms to attract foreign investors. Taking the assumption that the ongoing negotiations between Iran and P 5+1 (the UN Security Council's permanent members and Germany) to resolve Iran's nuclear crisis proceeds successfully, and that the next presidential election in June 2013 brings into power a moderate president, willing to mend fences with the international community, the earliest complete lifting of sanctions could take 3-5 years. Implementing changes in the Iranian legal and fiscal regime and improving the governance institutions, in order to promote and protect foreign investments, could also be achieved within a 5-year time frame, which could happen at the same time as international relations improve. Therefore, adding a lead time of 15 years for the development of export infrastructure, one should not expect Iran to become a major gas exporter until the 2030s at the earliest.

Having said that, one should ask whether, even if Iran can become a major player in the international gas market, exports should be the priority for the Government. Iran has a population of 75 million and is a developing country with growing population and rapid industrialisation. It needs to supply gas to domestic markets, including oilfield re-injection, gas-based industries, power generation and growing household and commercial sectors. Therefore, the country is in a completely different situation to Qatar domestically, as well as internationally. Our research showed that domestic consumption of gas, particularly in oilfield re-injection, yields greater economic and social returns compared

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<sup>677</sup> *ibid*

with gas exports. Moreover, factors which have prevented Iran from becoming a major gas exporter are very likely to continue for many years, reinforcing the likelihood that the country will never, despite its huge resources, become a major gas exporter.

Therefore, prior to making any plans for substantial increase of Iran's gas export capacity, decision makers are advised to thoroughly assess social and economic benefits resulting from allocating Iranian natural gas to various options in order to secure the long-term strategic and economic interest of the country. In other words, the gas resource allocation policy should establish a balance between the requirement for 'economic' and 'welfare' maximisation.

### **7.3. Future Research**

Although this research aims to offer a holistic analysis of issues related to the Iranian natural gas industry, no single study can adequately cover all of the historical, political, and economic issues influencing the development of the sector. Future studies may be undertaken to yield further sound and informative results.

First and foremost, future research may examine how international political relations and any subsequent economic and political measures would affect the promotion and attraction of foreign investment in Iran's petroleum industry. A second issue to examine is the effect that changing political attitudes in Iran towards foreign investors could have on attraction of foreign investment, potential modification of legal, fiscal and contractual regimes, leading to substantial development of the petroleum sector by external actors. Future development of the subsidies reform plan, and its political and economic ramifications on Iran's economic growth and development of its petroleum sector, is also worth additional study. The reform process has seen numerous upheavals and any changes in the political and economic conditions, including further intensification or easing of international sanctions, or changes in Government policy, can have direct impact on future success or failure of the plan. It is particularly important in the light of

the presidential election in Iran in June 2013, where there are hopes that a more moderate president, who may establish a better relationship with the international community comes into power. It is equally important that future studies focus on the economic analysis of optimal allocation of Iranian natural gas to various options. These studies should conduct a thorough cost-benefit analysis of different options, including different sectors of the domestic market, oilfield re-injection and export, to determine which options yield maximum economic return for the country giving due consideration to the importance of welfare maximisation and the important role of gas in raising living standards. However, in order to carry out such research, far more detailed economic information and statistical material needs to be available than could be accessed in the preparation of this thesis. Therefore, given the limitations of this thesis in terms of the huge canvas of historical, political, legal and economic issues which are required for a full analysis of the Iranian gas industry, numerous other avenues of research remain open.

## Appendices

### Appendix 1-The D'Arcy Oil Concession<sup>678</sup>

Between the Government of His Imperial Majesty the Shah of Persia, of the one part, and William Knox d'Arcy, of independent means, residing in London at No. 42, Grosvenor Square (hereinafter called "the Concessionnaire") of the other part;

The following has by these presents been agreed on and arranged-viz.:

#### Article 1

The Government of His Imperial Majesty the Shah grants to the concessionnaire by these presents a special and exclusive privilege to search for, obtain, exploit, develop, render suitable for trade, carry away and sell natural gas petroleum, asphalt and ozokerite throughout the whole extent of the Persian Empire for a term of sixty years as from the date of these presents.

#### Article 2

This privilege shall comprise the exclusive right of laying the pipelines necessary from the deposits where there may be found one or several of the said products up to the Persian Gulf, as also the necessary distributing branches. It shall also comprise the right of constructing and maintaining all and any wells, reservoirs, stations, pump services, accumulation services and distribution services, factories and other works and arrangements that may be deemed necessary.

#### Article 3

The Imperial Persian Government grants gratuitously to the concessionnaire all uncultivated lands belonging to the State which the concessionnaire's engineers may deem necessary for the construction of the whole or any part of the above-mentioned works. As for cultivated lands belonging to the State, the concessionnaire must purchase them at the fair and current price of the province.

The Government also grants to the concessionnaire the right of acquiring all and any other lands or buildings necessary for the said purpose, with the consent of the proprietors, on such conditions as may be arranged between him and them without their being allowed to make demands of a nature to surcharge the prices ordinarily current for lands situate in their respective localities.

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<sup>678</sup> From Gelvin. J. *The Modern Middle East*, New York: Oxford University Press, 2005, pp: 154-156.

Holy places with all their dependencies within a radius of 200 Persian archines are formally excluded.

#### **Article 4**

As three petroleum mines situate at Schouster, Kassre-Chirine, in the Province of Kermanschah, and Daleki, near Bouchir, are at present let to private persons and produce an annual revenue of two thousand tomans for the benefit of the Government, it has been agreed that the three aforesaid mines shall be comprised in the Deed of Concession in conformity with Article 1, on condition that, over and above the 16 percent mentioned in Article 10, the concessionnaire shall pay every year the fixed sum of 2,000 (two thousand) tomans to the Imperial Government.

#### **Article 5**

The course of the pipe-lines shall be fixed by the concessionnaire and his engineers.

#### **Article 6**

Notwithstanding what is above set forth, the privilege granted by these presents shall not extend to the provinces of Azerbadjan, Ghilan, Mazendaran, Asdrabad, and Khorassan, but on the express condition that the Persian Imperial Government shall not grant to any other person the right of constructing a pipe-line to the southern rivers or to the South coast of Persia.

#### **Article 7**

All lands granted by these presents to the concessionnaire or that may be acquired by him in the manner provided for in Articles 3 and 4 of these presents, as also all products exported, shall be free of all imposts and taxes during the term of the present concession. All material and apparatuses necessary for the exploration, working and development of the deposits, and for the construction and development of the pipelines, shall enter Persia free of all taxes and Custom-House duties.

#### **Article 8**

The concessionnaire shall immediately send out to Persia and at his own cost one or several experts with a view to their exploring the region in which there exist, as he believes, the said products, and in the event of the report of the expert being in the opinion of the concessionnaire of a satisfactory nature, the latter shall immediately send to Persia and at his own cost all the technical staff necessary, with the working plant and machinery required for boring and sinking wells and ascertaining the value of the property.



**Article 9**

The Imperial Persian Government authorises the concessionnaire to found one or several companies for the working of the concession. The names, "statutes" and capital of the said companies shall be fixed by the concessionnaire, and the directors shall be chosen by him on the express condition that, on the formation of each company, the concessionnaire shall give official notice of such information to the Imperial Government, through the medium of the Imperial Commissioner, and shall forward the "statutes", with information as to the places at which such company is to operate. Such company or companies shall enjoy all the rights and privileges granted to the concessionnaire, but they must assume all his engagements and responsibilities.

**Article 10**

It shall be stipulated in the contract between the concessionnaire, of the one part, and the company, of the other part, that the latter is, within the term of one month as from the date of the formation of the first exploitation company, to pay the Imperial Persian Government the sum of 20,000 sterling in cash, and an additional sum of 20,000 sterling in paid-up shares of the first company founded by virtue of the foregoing article. It shall also pay the said Government annually a sum equal to 16 percent of the annual net profits of any company or companies that may be formed in accordance with the said article.

**Article 11**

The said Government shall be free to appoint an Imperial Commissioner, who shall be consulted by the concessionnaire and the directors of the companies to be formed. He shall supply all and any useful information at his disposal, and he shall inform them of the best course to be adopted in the interest of the undertaking. He shall establish, by agreement with the concessionnaire, such supervision as he may deem expedient to safeguard the interests of the Imperial Government. The aforesaid powers of the Imperial Commissioner shall be set forth in the "statutes" of the companies created. The concessionnaire shall pay the Commissioner thus appointed an annual sum of 1,000 sterling for his services as from the date of the formation of the first company.

**Article 12**

The workmen employed in the service of the company shall be subject to His Imperial Majesty the Shah, except the technical staff, such as the managers, engineers, borers and foremen.

**Article 13**

At any place in which it may be proved that the inhabitants of the country now obtain petroleum for their own use, the company must supply them gratuitously with the quantity of petroleum that they themselves got previously. Such quantity shall be fixed according to their own declarations, subject to the supervision of the local authority.

#### **Article 14**

The Imperial Government binds itself to take all and any necessary measures to secure the safety and the carrying out of the object of this concession of the plant and of the apparatuses, of which mention is made, for the purposes of the undertaking of the company, and to protect the representatives, agents and servants of the company. The Imperial Government having thus fulfilled its engagements, the concessionnaire and the companies created by him shall not have power, under any pretext whatever, to claim damages from the Persian Government .

#### **Article 15**

On the expiration of the term of the present concession, all materials, buildings and apparatuses then used by the company for the exploitation of its industry shall become the property of the said Government, and the company shall have no right to any indemnity in this connection.

#### **Article 16**

If within the term of two years as from the present date the concessionnaire shall not have established the first said companies authorised by Article 9 of the present agreement, the present concession shall become null and void.

#### **Article 17**

In the event of there arising between the parties to the present concession any dispute of difference in respect of its interpretation or the rights or responsibilities of one or the other of the parties there from resulting, such dispute or difference shall be submitted to two arbitrators at Tehran, one of whom shall be named by each of the parties, and to an umpire who shall be appointed by the arbitrators before the proceed to arbitrate. The decision of the arbitrators or, in the event of the latter disagreeing, that of the umpire shall be final.

#### **Article 18**

This Act of Concession, made in duplicate, is written in the French language and translated into Persian with the same meaning. But, in the event of there being any dispute in relation to such meaning, the French text shall alone prevail.

## **Appendix 2- An Overview of the Iranian Model Buyback Contract (Paydar West Field, Asmari and Bangestan Reservoirs)<sup>679</sup>**

### **Article 2- Scope of service**

#### **National Iranian Oil Company, South Fields (Year 1999)**

Contractor responsible to N.I.O.C. for operations and is to provide all capital, technology and skills necessary for the conduct of Development Operations for this Contract, and shall bear the Petroleum Costs required in carrying out Development Operations, and to recover such costs as provided in Clause 22 hereof, and bear the risks that sufficient production additional production of Crude Oil, and or Natural Gas may not be produced from the Contract Area in order to recover all such Petroleum Costs.

### **Article 3 -Term (Duration)**

3.1. N .I.O.C. hereby authorizes Contractor to conduct development Operations in the end of the Development Phase in (To Be Negotiated) field. The conclusion of the Development Phase, under the Master Development Plan, for (To Be Negotiated) Field is (To Be Negotiated) months, unless extended by mutual agreement.

3.3. This Contract shall commence on the Effective Date, and shall continue through the Development Phase and thereafter until Contractor has recovered all Petroleum Costs and remuneration fee in accordance with Clause 22 ... which period shall not exceed (To Be Negotiated) years from the date on which ... Field has commenced first/additional production, unless extended by agreement.

### **Article 5- Rights of NIOC**

N.I.O.C. shall exercise all necessary control and supervision and has all rights to utilise the Contract Area for purposes not related to this Contract, except that such usage shall not prevent or hinder the carrying out of the Development Operations within the Field. N.I.O.C.s rights include inter alia:

#### **(c) – Insurance**

N.I.O.C. has the option to provide any legally required insurance coverage of materials and equipment, pursuant to 12.

### **Article 6- NIOC Assistance**

6.1 Land and water reasonably required by Contractor for the purpose of Development Operations shall be acquired by the N .I.O.C. and put at the disposal of Contractor. The

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<sup>679</sup> The draft buyback contract is provided from Kakhki Hedayati, M (2008).

purchase prices shall be either paid by N.I.O.C. or included in the Petroleum Costs if paid by Contractor.

#### **Article 7 - Rights and Obligations of Contractor**

7.2 Contractor shall register a branch office in Iran for the purpose of following and complying with local laws.

#### **Article 8 - Levies, Charges, Fees and Taxes**

8.1 Any Iranian corporate income tax, Social Security Charges, or other levies imposed are payable by Contractor and an amount representing such charge shall be compensated by the N.I.O.C. to Contractor.

8.2 Contractor shall not be entitled to recover as Petroleum Costs and taxes charges, fees and levies upon its income levied outside of Iran nor any taxes, charges, fees and taxes of any nature that are paid directly by N.I.O.C.

#### **Article 11 -Fixtures and Installations**

11.2 - Ownership of Assets - All lands and assets acquired by the Contractor shall be the property of N.I.O.C., except for machinery and equipment imported on a temporary basis pursuant to provisions of clause 25 hereof.

#### **Article 12 - Liability and Insurance**

12.1 - Insurance - Contractor shall maintain insurance coverage in amounts required and N.I.O.C. may exercise the option to provide, at the Contractor cost, such coverage at rates not greater than market rates elsewhere.

#### **Article 13 - Local Employment and Training**

13.1 Contractor shall give priority to Iranian citizens in employment, or personnel to carry out the Development Operations, limiting the employment of foreign personnel to only positions where qualified Iranian citizens are not available.

In regards to the requirements set out in the above Article, it can be added that the foreign company is obligated to prove that a non-Iranian employee has skills that are not available on the domestic employment market. Additionally, it is mandatory for training to be provided to Iranians with the purpose of eventually substituting the foreign worker. A further requirement is that the foreign employer must, on a mandatory basis, donate a sum of money that is a certain percentage of the foreign worker's pay (which must be at least IR 560.00 (about US\$70), as of 2001)). With regard to the expatriate employees' legal status, they must acquire a work permit from the Department for Employment of Expatriates at the Ministry of Labour and Social Affairs (MLSA), as well as a

simultaneously applied-for, one-year duration, renewable residence permit. If the company wishes to terminate their employment, they must navigate a complicated process, including a permission to terminate from the Labour Boards, which rarely favours the employer in their judgements.

#### **Article 16- Operator ship**

16.1 N.I.O.C. shall be the operator for all facilities, immediately after commissioning and start up.

#### **Article 17- Joint Management Committee**

17.1 Joint Management Committee ("JMC") of five representatives from each party. N.I.O.C. shall function as the JMC Chairman until the end of the first year, and thereafter JMC chairmanship shall alternate between members annually.

#### **Article 18 - Master Development Plan and Budget**

18.1 Master Development Plan, including Work Programs and Budgets for the Development Phase I attached as Appendix "[ ... ]". Capital Costs shall be equal to or less than (To be Negotiated) for the field to carry out the Development Operation, expended over (To Be Negotiated) years from effective date in the manner set out in more detail in Appendix "X". First *I* or additional production in the field is projected to occur within (To Be Negotiated) months after the Effective Date.

The amount is Sub-Clause 18.1 shall be the contracts ceiling, which shall not be increased.

#### **Article 22 -Cost Recovery and Remuneration Fee**

22.1 Contractor shall recover Petroleum cost, together with bank charges from the month the expenditure occurred at a rate equal to LffiOR plus/minus (To Be Negotiated) percent.

22.3- Remuneration Fee- In addition to the Capital Costs, Non-Capital Costs, Bank Charges thereon and Operating Costs, Contractor shall be entitled to a remuneration fee of (To Be Negotiated) US Dollars to be paid commencing the first month following the date of first/additional production from the field as follows: (To Be Negotiated)

In case of any changes required and approved by JMC in order to achieve the objectives of the Development Operations set forth in the original Master Development plan Contractor shall only be entitled to recover the additional related capital costs, resulting from all such approved changes up to the ceiling amount pursuant to clause 18.1 and

subject to clause 18.3. In such case the Remuneration Fee shall remain fixed and unchanged.

22.4 - Payment in Oil - Petroleum costs and the remuneration fee shall be paid to the Contractor. Oil/gas out of (To Be Negotiated) percent of the product produced from the field and delivered to Contractor pursuant to the crude oil/gas sales agreement.

In the event that the petroleum Cost and Remuneration Fee are not fully paid during the Amortization Period, Contractor shall be entitled to receive Crude oil/Gas produced from the field as a result of Development Operation carried out by Contractor, pursuant to the Long Term Sales Agreement, until such Petroleum Costs and Remuneration fees are recovered, or the terms expires pursuant to clause 3.3.

#### **Article 24- Use of National Companies and Equipment**

Contractor shall use the service of Iranian firms for the provisions of maximum utilization of Iranian content of the project with due regard to the laws of Iran. Article 25- Exports and Imports (Customs)

**25.1.** Materials and equipment are not available in Iran shall be imported in the name of N.I.O.C.

Any customs duties shall be paid by the Contractor and shall be reimbursed as non-capital costs.

#### **Article 27 -Assignment**

27.1 Any assignment by Contractor shall require the prior written consent of N.I.O.C., and which shall be granted or refused within thirty days of receipt by N.I.O.C. of notice from Contractor that it intends to make such an assignment.

#### **Article 31 -Governing Law**

Contract governed, interpreted by the laws of Iran.

#### **Article 32 -Arbitration**

Any dispute, controversy or claim arising out of or relating to this contract or the breach, termination or invalidity thereof, shall be finally settled by arbitration before three arbitrators.

Any award of the arbitrators shall be final and binding on the parties. Either party may seek execution of the award in any court having jurisdiction over the party against whom execution is sought.

#### **APPENDIX "A" -Description of the Contract Area**

**APPENDIX "B"- Accounting Procedure****APPENDIX "C" - Long Term Crude Sales Agreement****Quantity**

JMC under the Service Contract shall advise Seller (N.I.O.C.) and Buyer (Contractor) of the recoverable costs to be due to Buyer of the recoverable costs to be due to Buyer and the Service Contract (Service Contract Fees) during the next Quarter. Based upon the forecasted Service Contract Fees due to Buyer, Buyer shall furnish to Seller a statement of the volume of Crude Oil to be lifted in the lifting Quarter in order to compensate Buyer for the forecasted Service Contract Fees.

**Payment**

The Proceeds receivable by Seller under this Agreement shall be used to reduce the amounts owed to Buyer by Seller under the Service Contract and therefore no payments to Seller are required to pay Seller not post letters of credit or other guarantees of payment, relative to such deliveries, except as to any Crude Oil that Buyer may purchase from Seller in excess of amounts owed to Buyer under the Service Contract.

**APPENDIX "D" -Agreement on Procedure for Arbitration**

3 - The place of arbitration shall be agreed upon by the parties to the dispute. In the event that an arbitration site cannot be agreed upon prior to the appointment of a third arbitrator, then the arbitral tribunal shall, as its first act, convene in Tehran, Iran, to decide upon the site of arbitration.

4 - Each party shall appoint an arbitrator, and two arbitrators so appointed shall appoint a third arbitrator who shall act as chairman of the tribunal whom shall be from a country other than those of which the Parties are nationals.

II -Referral of matters on dispute to arbitration by either party, shall if necessary to subject to the obtaining of the approvals of the appropriate authorities of the parties concerned.

### Appendix 3- Subsidies Reform Act 2010

**Article 1.** The Government is required to reform the prices of energy carriers in accordance with the provisions of this law:<sup>680681682</sup>

- Domestic sale prices of energy carriers: gasoline, diesel fuel, fuel oil, kerosene, liquefied petroleum gas (LPG), and other oil condensates, inclusive of relevant costs (including transport and distribution expenses, taxes, and other legal duties) and depending on the quality of carriers, will be adjusted gradually until the end of the 5th Five-Year Development Plan (FYDP) 2010-15, up to a level which shall not be less than 90 percent of Persian Gulf FOB prices.<sup>683</sup>
- Average domestic sale price of natural gas will be adjusted gradually until the end of the 5th FYDP up to a level which shall not be less than 75 percent of average export price of natural gas, excluding transfer costs, taxes and legal duties.<sup>684</sup>
- Average domestic sale price of electricity will be adjusted gradually until the end of the 5th FYDP up to a level which shall be equal to full cost price.<sup>685</sup>

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<sup>680</sup> With regard to electricity and natural gas prices, the government is authorized to apply preferential prices, considering geographical regions, type, amount, and time of consumption. In cases where several families or subscribers share the benefits of a single subscription, Water, Electricity, and Gas Companies are required to install additional individual meters for additional families by charging only the cost of meter and its installation expenses; and in case it shall not be possible to install additional individual meters, the number of subscribers shall be increased to the number of individual users of the shared subscription.

<sup>681</sup> Calculation of prices of energy carriers after the first year of implementation of this law will be based on the exchange rate used in the relevant annual budget.

<sup>682</sup> The adjustment of relevant prices in the first year of implementation of this law will be made in a manner that generate an additional aggregate amount of revenue up to RLS 200,000 billion, but not less than RLS 100,000 billion.

<sup>683</sup> Sale prices of crude oil and gas liquids to domestic refineries will be equal to 95 percent of Persian Gulf FOB prices, and purchase prices of products from the refineries will be set in line with the said prices.

<sup>684</sup> To encourage investment, for a period of at least 10 years from the date of approval of this law, the prices of feedstock for industrial, refinery, and petrochemical plants per cubic meter, will not exceed a level which is equal to 65 percent of a basket of gas export prices of Persian Gulf origin (excluding transfer costs).

<sup>685</sup> Calculation of electricity cost price will be based on total costs of energy conversion, transmission and distribution, and fuel costs, with an efficiency of at least 38 percent of power plants and observance of standards; and the efficiency of the country's power plants shall be improved by at least 1 percent per year, so that it reach a level of 45 percent within 5 years from the date of implementation of this law, and also 2 the transmission and distribution power grid losses to be reduced to 14 percent by the end of the 5th FYDP. The government is required to make arrangements for rating of electricity producers in terms of efficiency and its distributors in terms of energy losses by establishing a



**Article 2.** To manage the impact of energy carriers price fluctuations on the domestic economy, the Government is authorized to keep the prices unchanged for consumers as long as Persian Gulf FOB prices fluctuate within a range of 25 percent, by paying subsidy or collecting differentials, as the case may be, and include such amounts in the account established for regulating energy carriers market, in the relevant annual budget. If price fluctuations exceed the said 25 percent range, prices will be adjusted accordingly.

**Article 3.** The Government is authorized to adjust the price of water and the fee chargeable

for sewage collection and disposal, in accordance with the provisions of this law.

- Average price of water for different uses will be adjusted gradually until the end of the 5th FYDP, up to a level which shall be equal to the cost price, considering the quality and the manner of purification.<sup>686687</sup>
- Calculation of chargeable fee for sewage collection and disposal services will be based on total costs of maintenance and operation of the sewage system, after deduction of the intrinsic value of delivered wastewater and Government aids under the annual budget (in connection with incentive policies).

**Article 4.** The Government is required to make arrangements for gradual targeting of subsidies payable on wheat, rice, cooking oil, milk, sugar, postal services, and air and rail (passenger) transportation services, until the end of the 5th FYDP.<sup>688</sup>

**Article 5.** The Government is required to make available the flour and bread subsidies to consumers, who have applied, to the extent payable in accordance with the annual budget bill, through appropriate methods.<sup>689</sup>

**Article 6.** The Government is required to adopt incentive and supportive policies, which are necessary to establish and expand industrial bread production units, and also to help compensate the losses to the flour and bread production units that may face difficulties as a result of implementing this law. The implementing regulations of this Article will be

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work group comprising governmental and nongovernmental experts, and to adopt appropriate incentives and supportive policies.

<sup>686</sup> The government is required to set the cost price of water by including all costs of water supply, transfer and distribution, and observing efficiency.

<sup>687</sup> Setting preferential and multiple prices for different uses of water, in view of geographical regions, type, and amount of consumption, will be authorized.

<sup>688</sup> Subsidies paid to producers in agriculture sector in each year should not be less than the same for the preceding year.

<sup>689</sup> Per capita bread subsidy payable to population of villages and the cities with less than twenty thousand people, and vulnerable groups in other cities, will be at least 50 percent more than the average per capita subsidy, at the discretion of the government.

prepared by the Ministry of Commerce, in cooperation with relevant organizations, and approved by the Cabinet within three months after the approval of this law.

**Article 7.** The Government is authorized to spend up to 50 percent of net proceeds resulting from the implementation of this law under the following items:

- Cash and non-cash subsidies payable to all households countrywide, considering the level of household income;
- Implementing a comprehensive social security system for the targeted population, such as: (i) Providing and expanding social insurances, health care services, ensuring and enhancing public health, and medical coverage for special and difficult-to-cure diseases; (ii) Providing assistance for financing housing costs, enhancing resistance of buildings, and creating employment; (iii) Empowering and implementing social support programs.<sup>690691</sup>

**Article 8.** The Government is required to spend 30 percent of the net proceeds resulting from the implementation of this law to pay for grants, or subsidies on bank facility charges, or specially-managed funds for implementation of the following items:<sup>692</sup>

- Optimizing energy consumption in production, services, and residential units, and encouraging energy savings and observing the consumption pattern introduced by the relevant implementing organization.
- Reforming technological structures of production plants, aimed at increasing efficiency of energy and water, and developing electricity generation from renewable resources.
- Compensating part of losses to the companies providing utility services—water and sewage, electricity, and natural gas—and oil products, and municipalities and townships, incurred as a result of implementing this law.

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<sup>690</sup> The implementing regulations of this Article, including how to identify the targeted population, and establish and update the needed databases; the method of payment to the targeted population; and the payments under this Article, will be proposed by Ministers of Economic Affairs and Finance, and Welfare and Social Security, and Head of Management and Planning Organization (MPO), and approved by the Cabinet, within three months after the approval of this law.

<sup>691</sup> The government can open the subsidy targeting account in the name of the head of each eligible family, or another eligible person determined by the government. The government is authorized to exercise control over the manner in which the funds are spent under the said account, including the applicable time, type of drawings, and the refund of amounts that have erroneously been deposited.

<sup>692</sup> The implementing regulations of this Article, including the method of supporting industries, agriculture, and services, and the manner of payments under this Article, will be proposed by Ministers of Economic Affairs and Finance, Industries and Mines, Agricultural Jihad, Commerce, Petroleum, Energy, and Interior, Chairman of the Iranian Chamber of Commerce, Industries and Mines, the Secretary General of the Chamber of Cooperatives, and Head of MPO, and approved by the Cabinet within three months after the approval of this law.

- Developing and improving public transportation, under the framework of Public Transportation Development and Fuel Consumption Management Law, and paying an amount up to the credit ceiling determined under Article (9) of the said law.
- Supporting the producers in agriculture and manufacturing sectors.
- Supporting production of industrial bread.
- Supporting non-oil export promotion.
- Developing interactive electronic services to eliminate or reduce need for unnecessary traffic.

**Article 9.** Sources discussed under Articles (7) and (8) of this law, including aid, facilities, and specially-managed funds, will be made available to the said persons through state-owned and private bank and non-bank financial institutions.

**Article 10.** Receipt of aids and subsidies discussed under Articles (7) and (8) of this law will be subject to providing accurate information. If the provided information proves to be inaccurate, the Government is required to take necessary legal actions for refunding the amounts so paid, while preventing future payments. If the persons consider that they are eligible for receipt of the aids and subsidies discussed under Articles (7) and (8) of this law, they may submit their objection to the Commission that shall be foreseen under the implementing regulations of this Article. The implementing regulations of this Article will be proposed by Ministers of Justice, Economic Affairs and Finance, Welfare and Social Security, and Head of MPO, and approved by the Cabinet within three months after the notification of this law.

**Article 11.** The Government is authorized to spend up to 20 percent of the net proceeds resulting from the implementation of this law, to compensate its impact on spending and the acquisition of capital assets.

**Article 12.** The Government is required to deposit all income sources resulting from implementation of this law into a special account titled subsidy targeting account with the General Treasury. 100 percent of funds so deposited will be allocated for the uses authorized

under Articles (7), (8) and (11) of this law, and under the framework of annual budget laws.<sup>693694695</sup>

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<sup>693</sup> The government is required to present credits amounts of sources and uses discussed under the said Articles in four separate items in the relevant annual budget bill.

<sup>694</sup> Cash and noncash aids provided to natural and legal persons as a result of implementation of this law will be exempt from income tax under the Direct Taxes Law 6 approved in Esfand 1366 (February 1988) as amended.

**Article 13.** The petty cash needed to implement this law will be included in the petty cash of the annual budget, and will be settled from sources generated by implementation of this law during the year.

**Article 14.** The interchangeability of credits discussed in Articles (7), (8) and (11) of this law will be authorized only for a maximum of 10 percentage point in the annual budget, so that the total proceeds so resulted shall be used as provided in this law.

**Article 15.** The Government is authorized to establish, within one month after coming into force of this law, a new organization of public company nature named Subsidy Targeting Organization (the Organization) for implementation of this law in accordance with the FYDP Law, by using the available resources (facilities, manpower and credits) or by restructuring and merging the existing companies. The Government is authorized to draw whenever needed the funds deposited to the Treasury as a result of implementation of this law, and make such amounts available to the Organization as aid, after deduction of the Government's share as per Article (11) hereof, which amounts will be utilized solely for purposes and obligations specified in Articles (7) and (8) of this law. The Organization's administration will be centralized, and it will be authorized to have only staff, planning, and supervising units in the centre. The members of its General Assembly will comprise Ministers of Welfare and Social Security, Economic Affairs and Finance, Commerce, Roads and Transportation, Agricultural Jihad, Industries and Mines, Petroleum, Energy, and Head of MPO. The company's Organization's articles of association, including its pillars, responsibilities and powers, will be prepared by the Ministry of Economic Affairs and Finance and MPO, and approved by the Ministerial Cabinet. Funds and credits discussed in this law, including in Articles (12) and (15), will be reflected in the country's general budget, like those of other public companies, and changes in the company's Organization's credit ceilings during the year will be subject to providing a proposal by the Government and its approved by Parliament, except for the cases authorized in accordance with provisions of this law, including Articles (2) and (14).<sup>7</sup> The Organization's unutilized funds in any year could be used in the succeeding year, and in any year it may make commitments for the succeeding years under the framework of this law. Credits governed by this law are subject to the Regulations Governing Spending Credits Exempted from Observance of the Public Audit Law and Other General Government Regulations Law approved on 06/11/1364 (January 26, 1986).

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Such aids to such persons for compensation in part or in whole of the price of goods or services provided by them will not be subject to the tax exemption provided under this note.

<sup>695</sup> The government is required to provide the Supreme Audit Court and Parliament with the detailed report of operations under this Article every six month.

The Organization is required to provide reports on performance, receipts and payments related to resources from subsidy targeting, for each of Articles (7) and (8) separately, at the end of each six-month period, to Parliament's Planning, Budget and Audit Committee and other relevant committees. The Supreme Audit Court is required to provide semi-annual reports to Parliament on the Organizations' operations based on the contemplated targets as provided in this law.

**Article 16.** Starting from the beginning of the year 1389 (March 21, 2010), the Government is authorized to increase the tax exemption level provided under Article (84) of the Direct Taxes Law, proportional to price adjustments under this law and in addition to its annual increase, subject to Ministry of Economic Affairs and Finance's proposal, over a period of five years and up to a maximum of 100 percent.

*The above law, consisting of 16 Articles and 16 Notes, was approved by the Islamic Assembly on Tuesday, 15 Day 1388 (January 5, 2010) and was confirmed by the Guardian Council on 23 Day 1388 (January 13, 2010).*

## Appendix 4- Natural Gas Pricing in Iran

**Table 1- Post-reform Household Natural Gas Prices**

Tier	Consumption Range (cubic meter)	IRR/cm( during 5 cold months)	IRR/cm ( during 7 non-cold months)
1	0-45	300	700
2	46-95	500	900
3	96-145	700	1200
4	146-195	900	1600
5	196-245	1100	2000
6	246-295	1600	2200
7	296-345	1900	2500
8	346-395	2200	2800
9	396-445	2500	3000
10	446-495	2800	3200
11	496-545	3200	3400
12	>545	3500	3500

Source: NIGC 2010

**Table 2- Post-Reform Gas Prices in different Geographical Regions 2010**

Consumption Level	1	2	3	4	5	6	7	8	9	10	11	12
Region 1	Up to 300	301- 400	500- 401	600- 501	700- 601	800- 701	900- 801	1000- 901	1100- 1001	1200- 1101	1300- 1201	> 1300
Region 2	Up to 250	350- 251	450- 351	550- 451	650- 551	750- 651	850- 751	950- 851	1050- 951	1150- 1051	1250- 1151	> 1250
Region 3	Up to 200	300- 201-	400- 301	500- 401	600- 501	700- 601	800- 701	900- 801	1000- 901	1100 - 1001	1200- 1101	> 1200
Region 4	Up to 150	250- 151	350- 251	450- 351	550- 451	650- 551	750- 651	850- 751	950- 851	1050- 951	1150- 1051	> 1150
Region 5	Up to 76	76- 150	250- 151	350- 251	450- 351	550- 451	650- 551	750- 651	850- 751	950- 851	1050- 951	> 1050
Price (IRR/cm)	300	500	700	900	1100	1600	1900	2200	2500	2800	3200	3500

Source: NIGC (2010)

**Table 3- Natural Gas Tariffs in various Sectors ( 2010-2011)**

Sector		Sub-Sector	Price (INR/cum)
Household		Residential premises	1200
		Central heating system	
Public	Cat.1	Commercial and Services	2000
	Cat.2	Sport, education, religious premises	1000
	Cat.3	Governmental premises	2000
Industry	Cat.1	Industrial units, private power generations, hotels, refineries, gas transmission stations, petrochemical plant	700
		Agriculture	1000
	Cat.2	Governmental power generations	800
	Cat.3	Transportation ( CNG stations)	2600

**Source: NIGC 2010-2011**

## Bibliography

### Books

- Abrahamian, E., *Khomeinism: Essays on the Islamic Republic*: University of California Press, 1993
- Adibi, S., *Baresi Emkan Tolid Va Saderat Lng Dar Keshvar Iran (Analysis of Production and Export of LNG in Iran)*: Azad Tehran University, 2002
- Adibi, S, and Fesharaki, F. "The Iranian Gas Industry" In *Natural Gas Markets in the Middle East and North Africa*, edited by Bassam Fattouh and Jonathan Stern. Oxford: Oxford University Press, 2011
- Aissaoui, A.et.al., *Gas to Europe: The Strategies of Four Major Suppliers*. Edited by Robert Mabro and Ian Wybrew-Bond. Oxford: Oxford University Press, 1999
- Alavi, S.A., *History of the Oil Industry in Iran*: California Institute of Asian Studies, 1978
- Alikhani, H., *Sanctioning Iran: Anatomy of a Failed Policy*. London: I.B.Tauris & Co Ltd, 2000
- Allsopp, C, and Stern J., "The Future of Gas: What Are the Analytical Issues Relating to Pricing?." In *The Price of Internationally Traded Gas*, edited by Jonathan Stern. Oxford: Oxford University Press, 2012
- Amiri, M., *Jaygah Iran Dar Regime Beinalmelal Gas (Iran's Position in the International Gas Regime)*. Azad Tehran University, 2007
- Amuzegar, J., *Iran's Economy under the Islamic Republic*. London: I.B. Tauris, 1993.
- Arjomand, A.S. *After Khomeini: Iran under His Successors*. Oxford: Oxford University Press, 2009
- Behzad, Hamid., *Eghtesade San'ate Gaze Iran (the Economics of Iranian Gas Industry)*. University of Tehran, 1973
- Berg, B.L., *Qualitative Research Methods for the Social Sciences*. USA: Pearson Education, 2007
- Bill, J.A., *The Eagle and the Lion: The Tragedy of American-Iranian Relations*: New Haven: Yale University Press, 1988
- Boyle, C., ed. *Liquefied Natural Gas: The Law and Business of LNG*. Edited by Paul Griffin. 2nd ed. London: Globe business Publishing Ltd, 2008
- Carothers, T. *Promoting the rule of law abroad: in search of knowledge*, Carnegie Endowment for International Peace, University of Michigan, 2010
- Dam, K.W. *The Law Growth Nexus: The Rule of Law and Economic Development*: Washington D.C.: Brookings Institution Press, 2006
- Darbouche, H. "Algeria's Natural Gas Market." In *Natural Gas Markets in the Middle East and North Africa*, 12-47: Oxford University Press, 2011
- . "The Pricing of Internationally-Traded Gas in Mena and Sub-Saharan Africa" In *The Pricing of Internationally Traded Gas*, edited by Jonathan Stern. Oxford: Oxford University Press, 2012
- Darbouche, H, and Mabro. R. "Egypt's Natural Gas Market: So Far So Good, but Where to Next?" In *Natural Gas Markets in the Middle East and North Africa*, edited by Bassam Fattouh and Jonathan Stern. Oxford: Oxford University Press, 2011
- Dargin, J., "Qatar's Gas Revolution" In *Natural Gas Markets in the Middle East and North Africa*, 306-42: Oxford University Press, 2011



- Davies, M.B. *Doing a Successful Research Project: Using Qualitative or Quantitative Methods*. Hampshire: Palgrave Macmillan, 2007
- Davoodi, M., *Baresie Ta'sire Avamele Mohiti Va Estratejihaye Monaseb Dar Saderate Gaze Iran (Analysis of Circumferential Elements and Proper Strategies for Iran's Natural Gas Export)*., Azad Tehran University, 1388 (2008)
- Dehghani, T., *Model Hadeaxar Sazi Manafe Eghtesadi Hasel AZakhayer Gazi Iran (a Model for Maximisation of Economic Benefits Resulting from Iran's Natural Gas Resources)*., University of Azad 1387 (2007)
- Dooley, D. *Social Research Methods*. USA: Prentice-Hall Inc. Englewood Cliffs, 1984
- Duero., *The Iranian Rentier State: Rentierism, Political and Economic Development in Iran*: VDM Verlag, 2009
- Ebrahimi, I., *Iran's Gas Export: Opportunities and Threats (Saderat-E Gaz-E Iran: Forsat-Ha Va Tahdid-Ha)*., Edited by Mostafa Azari: Research Institute of Tadbir-e Eshtesad, 1386 (2006)
- Ehteshami, A., "The Foreign Policy of Iran." In *The Foreign Policies of Middle East States*, edited by Lynne Rienner: Boulder & Co, 2002
- Ehteshami, A, and Zweiri, M., *Iran's Foreign Policy: From Khatami to Ahmadinejad*: Ithaca Press, 2008
- Fakhimi, G., *30 Sal Naft-e Iran-Az Melli Shodan Ta Enghelabe Eslami (30 Years of Iran's Oil- from Nationalisation to Revolution)*. Tehran: Mehr Andish, 2008
- Farmanfarmanian, K., *An Analysis of the Role of the Oil Industry in the Economy of Iran*: University of Colorado, 1955
- . *Nationalisation of the Anglo-Iranian Oil Company and Its Possible Effects on the Economic Development of Iran*: Stanford University
- Fattouh, B, and Stern, J., "Introduction" In *Natural Gas Markets in the Middle East and North Africa*, edited by Bassam Fattouh and Jonathan Stern: Oxford University Press, 2011
- Ferrier, R.W. "The Anglo-Iranian Dispute: A Triangular Relationship" In *Musaddiq, Iranian Nationalism and Oil*, edited by J.A Bill and R.W Louis. London: I.B. Tauris &Co, 1988
- Flower, A., "LNG in Qatar" In *Natural Gas Markets in the Middle East and North Africa*, 343-85: Oxford University Press, 2011
- . "Natural Gas from the Middle East", In *Natural Gas in Asia: The Challenges of Growth in China, India, Japan, and Korea*, edited by Jonathan Stern. Oxford: Oxford University Press, 2008
- Foss, M.M., "Natural Gas Pricing in North America." In *The Pricing of Internationally Traded Gas*, edited by Jonathan Stern. Oxford: Oxford University Press, 2012
- Gelvin, J. *The Modern Middle East*, New York: Oxford University Press, 2005
- "Glossary of Terms", American Petroleum Institute (API), 2001
- Hart, C., *Doing a Literature Review: Releasing the Social Science Research Imagination*. London: SAGE, 2006
- Heijman, W.J.M. *Depletable Resources and the Economy*, Wageningen Agricultural University, 1991
- Karsh, E., *The Iran-Iraq War 1980-1988*, Osprey, 2002
- Lessani, A., *Talaye Siah Ya Balaye Siah (Black Gold or Black Disaster)*.Tehran: Amir

- Kabir, 1357 (1979)
- Katouzian, H. *Iran in the 21st Century: Politics, Economics and Conflict*. London: Routledge, 2008
- . *Iranian History and Politics: The Dialectic of State and Society*. London: Routledge Curzon, 2003
- . *The Persians: Ancient, Medieval, and Modern Iran*: Yale University Press, 2009
- . *The Political Economy of Modern Iran: Despotism and Pseudo-Modernism (1926-1979)*. New York: New York University Press, 1981
- . *State and Society in Iran: The Eclipse of the Qajars and the Emergence of the Pahlavis*. London: I.B. Tauris, 2000
- Limbert, J.W., *Negotiating with Iran: Wrestling the Ghosts of History*: United States Institute of Peace Press, 2009
- Long, D.E., "Oil and the Iran-Iraq War" In *The Iran-Iraq War: An Historical, Economic and Political Analysis*, edited by M.S. El Azhary: Croom Helm, 1984
- Louis, R.W., "Musaddiq and the Dilemmas of British Imperialism" In *Musaddiq, Iranian Nationalism and Oil*, edited by J.A Bill and R.W Louis. London: I.B. Tauris &Co, 1988
- Makki, H., *Tarikh-E Bist Saleye Iran (Iran's 20-Year History)*, Tehran: Amir Kabir, 1362
- Mir Saleh Kohan, L., *Arzyabi Eghtesadi Arzeye Gaze Iran Be Bazare Orupa (Economic Analysis of Exporting Iranian Gas to European Market)*, Azad Tehran University, September 2007
- Marcel, V., *Oil Titans: National Oil Companies in the Middle East*: Brookings Institution Press, 2006
- Mosleh, K. *Estefadeye Behine Az Manabe Gazi Iran (Optimal Usage of Iran's Natural Gas Resources)*: Majlis Research Centre 2009 (1387)
- Nadimi, F. "The Role of Oil in the Outcome of the Iran-Iraq War" In *The Iran-Iraq War: New International Perspectives*, edited by Nigel Ashton and Brayn Gibson: Routledge, 2013
- "*Oxford English Dictionary*", Oxford: Oxford University Press, 2010
- Pardeli, B., *Tahlil Hazine Fayedeye Eghtesadi Asarat Tabdile Gas Tabi'i Be LNG (Cost-Benefit Analysis of Converting Gas to LNG)*, Azad Islamic University, 1387 (2008)
- Pelletiere, S.C., *The Iran-Iraq War: Chaos in a Vacuum*: Greenwood Publishing Group, 1992
- Otto, J, and Cordes, J. *Fiscal Policy and Mineral Taxation, the Regulation of Mineral Enterprises: A Global Perspective on Economics, Law and Policy*. Colorado, U.S.: Rocky Mountain Mineral Law Foundation, 2002
- Rakel, P. *The Iranian Political Elite, State and Society Relations and Foreign Relations since the Islamic Revolution*, Duke University Press, 2008
- Randall, A. *Resource Economics*. New York: John Wiley, 1987
- Randall, S.J. *United States Foreign Oil Policy since World War I: For Profits and Security*: McGill-Queen's University Press, 2005
- Redgwell, C, et.al. "Energy Law in Europe: Comparison and Conclusions." In *Energy Law in Europe*, edited by Roggenkamp, Anita Ronne and Inigo del Guayo: Oxford University Press, 2001

- Robert K, Y. *Case Study Research: Design and Methods*. Fourth ed. Vol. 5. USA: SAGE, 2009
- Schrijver, N., *Sovereignty over Natural Resources: Balancing Rights and Duties*: Cambridge University Press, 1997
- Shiravand, A. "*Baresi Mechanism Ghimat Gozari Baraye Gaz Tabi'i Motale'eye Moredi Iran (an Analysis of Natural Gas Pricing Mechanism- a Case-Study of Iran)*." Azad University 1384(2005)
- Smith, E., etl.al., *International Petroleum Transactions*. USA: Rocky Mountain Mineral Law Foundation, 2000
- Soleimanian, R. *Takhmine Taghazaye San'ate Gaze Tabi'i Dar Iran (Estimates of Natural Gas Consumption in Iran)*, Azad Tehran University, 2003
- Stern, J., *Natural Gas in Asia: Introduction*. Edited by Jonathan Stern, Natural Gas in Asia: The Challenges of Growth in China, India, Japan, and Korea. Oxford: Oxford University Press, 2008
- ., *The Future of Russian Gas and Gazprom*: Oxford Institute for Energy Studies, 2005
- Sweeney, J.L., "Economic Theory of Depletable Resources: An Introduction " In *Handbook of Natural Resource and Energy Economics*, edited by Allen V. Kneese and James L. Sweeney, 1992
- Tamanaha, B.Z. *On the Rule of Law: History, Politics, Theory*, Cambridge University Press, 2004
- Trubek, D.M, and Santos, A, *The rule of law in Development assistance: Past, present and future*, in *The New Law and Economic Development: A Critical Appraisal* 74, 2006
- Watson, A. *Legal Transplants: An Approach to Comparative Law*, Virginia Legal Studies: University Press of Virginia, 1974
- Waverman, L. *National Policy and Natural Gas: The Costs of a Border*: University of Toronto, Institute for the Quantitative Analysis of Social and Economic Policy 1972.
- Willett, E., *War and Conflict in the Middle East: The Iran-Iraq War*: The Rosen Publishing Group, 2004
- Yergin, D. *The Prize- the Epic Quest for Oil, Money and Power*: Simon & Schuster Jan, 1991
- Zoghi, I. *Masaele Siasi Eghtesadi Naft-e Iran (the Political and Economic Aspects of Iranian Oil)*, Tehran: Pazhang, 1381 (2001)

#### **Journal Articles & Reports**

- Aguilera, R, et.al., 'Depletion and the Future Availability of Petroleum Resources', *The Energy Journal* 30, no. 1.
- Agustina, C.D R.D, et.al., 'Black Hole or Black Gold? The Impact of Oil and Gas Prices on Indonesia's Public Finances', Washington D.C: *The World Bank* September 2008.
- Aik, A., 'Iran Becoming Mega Petchem Producer, Natural Gas Consumer', *Oil & Gas Journal* (27 March 2007)
- Alami, R., 'Egypt's Domestic Natural Gas Industry', *Oxford Institute for Energy Studies*, 2006

- Alavi, S.A. 'The Impact of Sanctions against I.R. Iran, Iraq and Libya with Special Focus on Iran's Oil & Gas Upstream Contracts' *Oil, Gas & Energy Law Intelligence* 1, no. 2 (2003)
- Alderman, H., 'Subsidies as a Social Safety Net: Effectiveness and Challenges', *World Bank Institute*, September 2002
- . 'Subsidies as a Social Safety Net: Effectiveness and Challenges', *World Bank Institute*, September 2002
- Alexander, R.G., 'Iran and Libya Sanctions Act of 1996: Congress Exceeds Its Jurisdiction to Prescribe Law', *Washington and Lee Law Review* 54, no. 1601 (1997): 34
- Ali, R.I., 'Iranian Oil and Gas: A Legal Framework', *Oil and Gas Law and Taxation Review* no. 11 (1999)
- al-Kaabi, S., 'Presentation at the 2009 International Petroleum Technology Conference', *World Energy Challenge Endurance and Commitment*, 7 December 2009
- Amini, F, et.a., 'Moroori Bar 22 Sal Amare Energi Keshvar (1367-1388) (an Overview of the Country's Energy Statistics ( 1987-2009))', *Ministry of Energy*, Spring 2011
- Amuzegar, J., 'Iran New Subsidy Reform: A Shot in the Dark', *Middle East Economic Survey* June, (2010)
- . 'Iran's Oil as a Blessing and a Curse', *Brown Journal of World Affairs* XV, no. I (2008).
- . 'Iranian Oil Buybacks: A Formula No One Likes', *Oil & Gas Journal* no. August 27 (2001).
- . 'Iran's Subsidy Reform: A Progress Report', *Middle East Economic Survey*. June (2011).
- 'An Introduction for Targeted Subsidies Plan', *Ministry of Economics and Finance, Communication Division*, 1388 (2010)
- 'Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative', *Prepared for Submission to the G-20 Meeting*, OPEC, IEA, OECD, World Bank Joint Report. Toronto (Canada), June 2010
- Anson, Th.K., 'The Case for a White Market in the Allocation of Natural Gas during Shortages', *Texas Law Review*, 57, no. 615 (1978-1979)
- Arshadi, A, and Teimouri, B., 'Baresi Tahlili Vaziat Saderate Gas Tabiee, LNG Va Varedate Gaz Dar Iran (Analytical Study of Natural Gas Export, LNG and Gas Import in Iran)', *Naft va Energy* (2010)
- Aysan, A, et.al. , 'Governance Institutions and Private Investment: An Application of the Middle East and North Africa', *The Developing Economies* XLV, no. 3 (September 2007): 339-77.
- Azadi, A. K, and Yarmohammad, M.H., 'Analysis of Iran's Crude Oil Export Future Capacity', *Energy Policy* 2011, no. 39 (2011): 3316-26
- Babali, T., 'The Role of Energy in Turkey's Relations with Russia and Iran', *The Turkey, Russia and Iran Nexus: Economic and Energy Dimensions*. Ankara, Turkey, March 2012
- Bacon, R, et.al., 'Expenditure of Low-Income Households on Energy: Evidence from Africa and Asia', Washington D.C: *The World Bank*, June 2010
- Bacon, R, et.al., 'Subsidies in the Energy Sector: An Overview', edited by World Bank Group Energy Sector Strategy. Washington D.C: The World Bank, July 2010

- Bacon, R, and Kojima, M., 'Phasing out Subsidies- Recent Experience with Fuel in Developing Countries', *Public Policy for Private Sector*. Washington D.C: Financial and Private Sector Development Vice President, August 2006
- Bahramian, Y, and Alipour, M., 'Barasi Zarib Oft Tolid Dar Ayadin Naft Va Gas (Analysis of Depletion Rate of Iran's Oil and Gas Reservoirs)', *ekteshaf va Tolid*, no. 84, November 2011
- Bahreini, M., 'Analysis of Iran's Position in Natural Gas Trade', *Ekteshaf va Tolid* no. 77, March 2010
- Baig, T, et.al., 'Domestic Petroleum Product Prices and Subsidies: Recent Developments and Reform Strategies', Washington D.C.: The World Bank - Fiscal Affairs Department, March 2007
- Bakhtiari, S, and Shahbudaghlou, F. "Energy Consumption in the Islamic Republic of Iran." edited by OPEC Review: Organization of the Petroleum Exporting Countries, 2000
- 'Baresi Oft Tolide Makhazene Naftie Keshvar Va Manafe Melli (Analysis of Depletion Rate of Oil Fields' Production and Country's National Interest)' *Majlis Research Centre*, 2009
- Barkeshli, F., 'Iran's Energy Diplomacy: Challenges and Opportunities', *Middle East Economic Survey* 3, no. 6 (June 2012)
- Barrera-Hernandez, L., 'Sovereignty over Natural Resources under Examination: The Inter-American System for Human Rights and Natural Resource Allocation', *Annual Survey of International and Comparative Law* 43, (2006)
- Berument, M. H, et.al., 'The Impact of Oil Price Shocks on the Economic Growth of Selected Mena Countries', *The Energy Journal* 31, no. 1 (2010): 1-30
- "Betwixt Petro-Dollars and Subsidies, Surging energy consumption in the Middle East and North Africa States", International Energy Agency, 2008
- Bindemann, K., 'Production-Sharing Agreements: An Economic Analysis', Oxford Institute for Energy Studies, 1999
- Birol, F., 'World Energy Outlook: Key Strategic Challenges', International Energy Agency, 2006
- Brexendroff, A, et.al., 'The Iranian Buy-Back Approach', *Oil, Gas & Energy Law Intelligence* 7, no. 1 (2009)
- Brinded, M., 'The Future of Global Energy and the Role of the Middle East', American University of Cairo, Egypt: Royal Dutch Shell plc, 2010
- British Petroleum, 'British Petroleum Statistical Review of World Energy', 2004
- British Petroleum, 'British Petroleum Statistical Review of World Energy', 2005
- British Petroleum, 'British Petroleum Statistical Review of World Energy', 2009
- British Petroleum, 'British Petroleum Statistical Review of World Energy', 2010
- British Petroleum, 'British Petroleum Statistical Review of World Energy', 2011
- British Petroleum, 'British Petroleum Statistical Review of World Energy', 2012
- Brower, D., 'Iran: Battling Against the Odds', *Petroleum Economist*, September (2008)
- , 'Iran Pledges New Gas Exports, New Investment Opportunities', *Petroleum Economist* no. November (2009)
- Brumberg, D, and Ahram, A., 'The National Iranian Oil Company in Iranian Politics' The

- James A. Baker III Institute for Public Policy-Rice University, 2007
- Bunter, M., 'An Introduction to the Islamic (Shari'a) Law and to Its Effect on the Upstream Petroleum Sector', *CEPMLP Publication* (2005)
- ., 'The Iranian Buy Back Agreement', *Oil, Gas & Energy Law Intelligence* 1, no. 2 (2003)
- Burniaux, J.M, and Chateau, J., 'Mitigation Potential of Removing Fossil Fuel Subsidies: A General Equilibrium Assessment', OECD: Economics Department, 2011
- Buscaglia, E., 'Law and Economics of Development', Hoover Institute, Stanford University, 1999
- Cavendish, R., 'The Iranian Oil Fields Are Nationalised', *History Today* 51, no. 5 (2001)
- Chateau, J, and Burniaux, J., 'Mitigation Potential of Removing Fossil Fuel Subsidies: A General Equilibrium Assessment', *OECD Economics Department Working Paper*: OECD, 2011
- Christoff, J., 'Gao-08-58 Iran Sanctions', Washington: United States Government Accountability Office, 2007.
- Ciszek, S., 'Iran Oil Minister Calls for Tenfold Gas Price Hike' *IHS Global Insight Middle East Energy* (2010)
- Clark, J., 'Gas Use at Issue in Iran as Oil Production Sags', *Oil & Gas Journal* (2005)
- Clements, B, et.al., 'Government Subsidies: Concepts, International Trends and Reform Options', Washington DC: International Monetary Fund, September 1995
- Clements, B, et.al., 'Real and Distributive Effects of Petroleum Price Liberalization: The Case of Indonesia', *The Developing Economies XLV*, no. 2 (June 2007): 220-37
- Clements, B, et.al., 'Economic Determinants of Government Subsidies', International Monetary Fund: Fiscal Affairs Department, 1998
- Coady, D, et.al., 'The Magnitude and Distribution of Fuel Subsidies: Evidence from Bolivia, Ghana, Jordan, Mali, and Sri Lanka', Washington D.C.: The World Bank, November 2006
- Coady, D, et.al., 'Petroleum Product Subsidies: Costly, Inequitable and Rising', International Monetary Fund, February 25, 2010
- Cohen, D., 'Gas Subsidies and Iran' ASPO-USA, 5 July 2007
- Cooter, R.D., 'Decentralised Law for a Complex Economy: The Structural Approach to Adjudicating the New Law Merchant', *University of Pennsylvania Law Review* 144, (1996): 1643-96
- Coredesman, A, et.al., 'U.S. And Iranian Strategic Competition: The Sanctions Game: Energy, Arms Control, and Regime Change', Centre for Strategic and International Studies (CSIS), March 2012
- Cropper, M.L, et.al., 'The Optimal Consumption of Depletable Natural Resources: An Elaboration, Correction and Extension', *The Quarterly Journal of Economics* 92, no. 2 (1978): 337-44
- "Country at a Glance: Iran." The World Bank, 2010
- Daly, J., 'Iran, Besieged by Gasoline Sanctions, Develops GTL to Extract Gasoline from Natural Gas', *Oil Price*, 13 December 2011
- ., 'Issues in the Pricing of Domestic and Internationally-Traded Gas in Mena and Sub-Saharan Africa', Oxford Institute for Energy Studies, June 2012

- Darbouche, H, and Fattouh B., 'The Implication of the Arab Uprisings for Oil and Gas Markets', (2011)
- Dargin, J., 'The Gulf Natural Gas Dual Pricing Regime: WTO Rules and Economic Growth in the Gulf', Dubai Initiative Working Paper, 2010
- , 'Import Jolt Highlights Ironies of Iranian Gas', *Oil & Gas Journal* (2008)
- Davis, K.E. "What cant the rule of law variable tell us about rule of law reforms?." Law and Economics Research Paper, No.04-026, New York University, 2004
- Davis, K.E, and Trebilcock, M.J. "The relationship between law and development: Optimists versus Skeptics." Public law and Legal Theory Research Paper Series, Working Paper 08-14, New York University, May 2008
- de Moor, A, and Calamai, P., 'Subsidizing Unsustainable Development: Undermining the Earth with Public Funds', edited by Institute for Research on Public Expenditure: Earth Council, 1997
- "Developing a natural gas trading hub in Asia: Obstacles and opportunities." International Energy Agency, 2013
- Dittrick, P., 'Yadavaran Buyback Contract Signals Better Iranian Terms', *Oil, Gas & Energy Law Intelligence* 7, no. 1 (2009)
- 'Doing Business-Iran, Islamic Republic.', The World Bank, 2011
- Ebrahimi, S.N., and Shiroui Khouzani, A. 'The Contractual Form of Iran's Buy-Back Contracts in Comparison with Production Sharing and Service Contract', edited by Society of Petroleum Engineers: Middle East Oil Show, June 2003
- Ebtekar News*, "Sherkat Saderate Gas Iran Monhal Shod (National Iranian Gas Export Company Is Nullified)." 15 July 2012
- "Economic Analysis Division, 'Carrots and Sticks: Taxing and Subsidising Energy'", International Energy Agency, 2006
- Economic Service*, "Bazarhaye Jahani Dar Entezare Tose'eye Saderate Gaze Iran (International Markets Waiting for Development of Iran's Natural Gas Export)." 2003
- Economides, M.J., 'The Economics of Gas to Liquids Compared to Liquefied Natural Gas', *World Energy* 8, no. 1 (2005)
- Economist*, 'A Liquid Market', (14 July 2012)
- Einhorn, R.J., 'Implementation of Iran Sanctions', House Committee on Oversight and Government Reform, 29 July 2010
- Ekteshaf va Tolid*, 'An Analysis of Oil and Gas Reservoir Management in Iran (Negahi Be Chalesh-Haye Modiriate Makhazen-E Naft Va Gaze Keshvar)', 34, (2006)
- Ekteshaf va Tolid*, "Olaviat Asli Sherkat Naft: Afzayesh Tolid Sianati Naft ( NIOC's Main Priority: Enhancing Oil Fields Rate of Recovery)." no. 84 (Aban 1390 ( November 2011))
- Energy Compass*, "Iran Rules out Production-Sharing Deals." July, (2004)
- Esfahani, H, et.al., 'Oil Exports and the Iranian Economy', Faculty of Economics, University of Cambridge, July 2012
- Esmaili, M., 'Manabe Gazi Gheyr Motearaf Tahdidi Baraye Solteye Keshvarhaye Gaz Khiz (Shale Gas: A Threat to Gas-Rich Countries)', *Ekteshaf va Tolid* no. 77 (Esfand 1389 (2010))
- Evans, D., 'Pearl GTL Set for Big Payback', *Upstream* (11 March 2008)

- Farnejad, H. 'How Competitive Is the Iranian Buy-Back Contracts in Comparison to Contractual Production Sharing Fiscal Systems?.' University of Dundee, 2006
- . 'Strategic Approach & Legal Implications of Investment in Geopolitically Sensitive Iran' University of Dundee, 2006
- Fattouh, B, and El-Katiri, L. "Energy and Arab Economic Development", *Arab Human Development Report: United Nations Development Programme*, 2013
- . 'Energy Subsidies in the Arab World', *Arab Human Development Report: United Nations Development Programme*, 2012
- Fesharaki, F. "Gas Use at Issue in Iran as Oil Production Sags" *Oil & Gas Journal* (May 2006)
- Fesharaki, F., and. Varzi, M. "Investment Opportunities Starting to Open up in Iran's Petroleum Sector" *Oil & Gas Journal* (2000)
- Financial Times*, "Total Chief Defies US Threat-Investment in Iran: French Oil Company Takes on the US over Sanctions." 30 September 1997
- "Fossil-Fuel Subsidies Are Distorting Price Signals", *World Energy Outlook: International Energy Agency*, 2010
- "Fossil-Fuel Subsidies in APEC Economies and the Benefits of Reform", *An IEA background paper for the Asia-Pacific Economic cooperation: International Energy Agency*, 2011
- Garver, J, et.al. "Moving (Slightly) Closer to Iran China's Shifting Calculus for Managing Its "Persian Gulf Dilemma" *Asia-Pacific Policy Papers* Washington D.C.: The Edwin O. Reischauer Center for East Asian Studies, 2009
- Garver, J.W. "China's Investment in Iran Oil and Gas" Sam Nunn School of International Affairs, Georgia Institute, 2010
- Genovese, N, et.al. "GTL Technology and It's Role in the World Energy Markets" *Eni* (2004-2005)
- Ghandi, A, and Lin, C. "Do Iran's Buy-Back Service Contracts Lead to Optimal Production? The Case of Soroosh and Nowrooz", *Energy Policy* 42, (March 2012): 181-90
- Gharavi, H. "The 1997 Iranian International Commercial Arbitration Law: The UNCITRAL Model Law", *International Arbitration* 15, no. 1 (1999): 85
- Ghorban, N. "Chera LNG? (Why LNG?)", *Iran Economics* (4th December 2010)
- . "Gereh Koor Estrategy San'at Gaz Dar Iran (Confusion over Strategies for Iran's Natural Gas Industry)", *donya-e-eqtasad*, 2006
- . "The Impact of Recent Developments on Iran Gas Export Project to Europe.", *4th South East Europe Energy Dialogue*. Thessaloniki, Greece, 2011
- . "Iran's Future Gas Development and Exports", *Middle East Economic Survey* (25 February 2008)
- . "Monetizing Iran's Gas Resources and the Debate over Gas-Export and Gas-Based Industries Options", *Middle East Economic Survey* XLIX, no. 28 (10 July 2006)
- . "Naa Formule San'at Kharab Kon (Improper Formula Destroying the Industry)" *Iran Economics*, (19 Ordibehesht 1390 (9 May 2011))
- . "The Need to Restructure Iran's Petroleum Industry (Revisited after Eight Years)", *Middle East Economic Survey* XXVIII, (2005): 6



- . "Potentials and Challenges in the Iranian Oil and Gas Industry", *Middle East Institute* (29 January 2009)
- Gittins, R. "The Rapid Growth in the Global Economy Is Outstripping the Ability If the Planet's Natural Resources to Sustain It; Headlong to Growth Overload", 2006
- Giulio, F, et.al. "Domestic Petroleum Price Smoothing in Developing and Transition Countries", Washington D.C: International Monetary Fund, 2001
- "Global Fossil Fuel Subsidies and the Impacts of Their Removal", International Energy Agency, 2008
- Global Subsidies Initiative*, 'Arab Governments Turn to Subsidies to Quell Popular Unrest', Geneva, 11 April 2011
- Global Subsidies Initiative*, 'Policy Brief: A High-Impact Initiative for Rio+20: A Pledge to Phase out Fossil-Fuel Subsidies', August 2011
- "Goods and Services Consumption Price Index in Urban Areas", Central Bank of Iran, April 2012
- "Goods and Services Consumption Price Index in Urban Areas", Central Bank of Iran, August 2012
- "Goods and Services Consumption Price Index in Urban Areas", Central Bank of Iran, January 2012
- "Goods and Services Consumption Price Index in Urban Areas", Central Bank of Iran, March 2012
- "Goods and Services Consumption Price Index in Urban Areas", Central Bank of Iran, October 2010
- "Goods and Services Consumption Price Index in Urban Areas", Central Bank of Iran, January 2011
- Granado, J, et.al. "The Unequal Benefits of Fuel Subsidies: A Review of Evidence for Developing Countries" In *IMF Working Paper*. Washington: International Monetary Fund, 2010
- Groenendaal, W. J. H van, and Mazraati, M. "A Critical Review of Iran's Buyback Contracts" *Energy Policy* 34, (2006): 3709-18
- "Growing Impact of Emerging Economies on the Oil Market", *Monthly Oil Market Report*: OPEC, August 2012
- "Guide to Invest in Iran", Tehran: Organization for Investment, Economic & Technical Assistance of Iran, 2005
- Guillaume, D, et.al. "Iran: The Chronicles of the Subsidy Reform", International Monetary Fund, 2011
- Gupta, S, et.al. "Issues in Domestic Petroleum Pricing in Oil-Producing Countries", *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* edited by Jeffrey Davis, Annalisa Fedelino and Rolando Ossowski, 383-415. Washington DC, US: International Monetary Fund, 2003.
- Global Subsidies Initiative*, "Iran Makes Drastic Cuts to Subsidies for Energy and Other Goods." 8 February 2011
- Gupta, S, et.al. "Equity and Efficiency in the Reform of Price Subsidies- a Guide for Policymakers", (2000)
- Gylfason, Th. "Natural Resources and Economic Growth: From Dependence to Diversification", Centre for Economic Policy Research, 21 November 2004

- Haggard, S, et.al. "The Rule of Law and Economic Development", *The Annual Review of Political Science* (December 2007)
- Hakimian, H. "How Sanctions Affect Iran's Economy", In *Council on Foreign Relations*, May 2012
- . "Institutional Change, Policy Challenges, and Macroeconomic Performance: Case Study of the Islamic Republic of Iran (1979-2004)", Washington D.C.: The International Bank for Reconstruction and Development, The World Bank, 2008
- . "Iran's Free Trade and Special Economic Zones: Challenges and Opportunities", *Conference on Iranian Economy at a Crossroads: Domestic and Global Challenges*. University of Southern California, 18-19 September 2009
- Handrlica, J. "An Independent Regulatory Authority for the Energy Sector: Development, Models and Challenges-Approaches to the Energy Sector Regulation in a Comparative Perspective" *Oil, Gas & Energy Law Intelligence* 2, no. 1 (2004)
- Harris, K. "The End of Iran's Revolutionary Social Compact?", *The XXVI International Sociology Association World Congress of Sociology*. Gothenburg, Sweden: Department of Sociology, John Hopkins University, July 2012
- Hassani, S. "Vezerat-E Bazargani Va Hadafrmani Yaraneha (Ministry of Commerce and Targeting of Subsidies)", Tehran: Ministry of Commerce, Paez 1389 (Autumn 2010)
- Hassantash, G.H. "Baresi Vaziat GTL Dar Iran (Analysing GTL Industry in Iran)", *Eghtesad Energy (Energy Economics)* no. 115 (2009): 12-18
- . "Buy-Back Contracts and Asymmetric Information" ,*Oil, Gas & Energy Law Intelligence* 7, no. 1 (2009)
- . "Naft Va Amniate Melli (Oil and National Security)." Institute for Energy Studies, 2006
- . "Saderate Gaz Iran Az Tavahom Ta Barname (Iran's Gas Export: From Illusion to Plan)." *Mosalas*, edited by Kaveh Karegar, 2006 (1385)
- . "Trend of Crude Oil Prices: Buy-Back Contracts Vs. PSCs." *Oil, Gas & Energy Law Intelligence* 7, no. 1 (2009)
- Hassanzadeh, E. "Recent Developments in Iran's Subsidies Reform: Lessons and Recommendations." Global Subsidies Initiative (GSI) of the International Institute of Sustainable Development (IISD), October 2012
- Hayes, M.H, and Victor D.G. "Politics, Markets and the Shift to Gas: Insights from the Seven Historical Case Studies." Program on Energy and Sustainable Development, Stanford University, 2005
- Henderson, J. "Domestic Gas Prices in Russia- Towards Export Netback?" *Oxford Institute for Energy Studies* (November 2011)
- Herzig, E. "Regionalism, Iran and Central Asia." *International Affairs* 80, no. 3 (2004): 503-17
- Higbee, J, and Schmid, F.A. "Rule of Law and Economic Development." *International Economic Trends* (August 2004)
- Hope, E, and Singh, B. "Energy Price Increase in Developing Countries: Case Studies of Colombia, Ghana, Indonesia, Malaysia, Turkey, and Zimbabwe." *Policy Research Working Paper*. Washington D.C: The Work Bank March 1995
- Hosseini, M. "Gas Export: Opportunity or Threat?" *Etemad* 2006 (1385)

- Hotelling, H. "The Economics of Exhaustible Resources." *The Journal of Political Economy* 39, no. 2 (1931): 137-75
- Houri J, H, and Baratimalayeri, A. "The Crisis of Gasoline Consumption in the Iran's Transportation Sector." *Energy Policy* 26, (2008): 2536-43
- "Investing in Oil in the Middle East and North Africa: Institutions, Incentives and the National Oil Companies." Sustainable Development Department-The World Bank, August 2007
- "Iran's Energy Balance." Ministry of Energy, 1967- 2009
- "Iran's Energy Balance." Ministry of Energy, 1980
- "Iran's Energy Balance." Ministry of Energy, 2009
- "Iran's Energy Balance." Ministry of Energy, 2010
- "Iran's Energy Balance." Ministry of Energy, 2011
- Iran Exports Gas Crisis as Imports Cease." *Oil and Energy Trends* (2008)
- "Iran Sanctions: Impact in Furthering U.S. Objectives Is Unclear and Should Be Reviewed." United States Government Accountability Office, December 2007
- "Iran's Bid to Lure Oil Investment Succeeding Despite U.S Sanctions ". *Oil & Gas Journal* April 5, no. General Interest; News (1999)
- Islam, R. "Institutional reform and the judiciary: which way forward." Policy Research Working Paper 3134. Washington: World Bank, September 2003
- Iranian Students' News Agency (ISNA)*, "movafeghan va mokhalefan-e hadafmandi (Proponents and Opponents to Targeted Subsidies Act) ." 7 May 2012
- "Islamic Republic of Iran." edited by Oil & Gas Directory Middle East, 2011
- "Islamic Republic of Iran Environment Strategy Study." edited by Natural Resources & Environment Division, Maghreb and Iran Department and Middle East and North Africa Region. Washington D.C: The World Bank, May 1995
- Jergenson, D. "Capital Theory and Investment Behavior." *American Economic Review* 53, no. 2 (1963): 247-59
- "Joint Report by IEA, OPEC, OECD and World Bank on Fossil-Fuel and Other Energy Subsidies: An Update of the G20 Pittsburgh and Toronto Commitments." 2011
- Kakhki, M.Hedayati. "A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems." University of Durham May 2008
- Kanda, H, and Milhaupt, C.J. "Re-examining legal transplants: The director's fiduciary duty in Japanese Corporate Law." *American Journal of Comparative Law* 51: 887-901
- Karbassi, A.R, et.al. "Sustainability of Energy Production and Use in Iran." *Energy Policy* 35, (2007): 5171-80
- Karimi Zarchi, M. "Analysis of Optimal Allocation of Iran's Gas Resources with a Particular Focus on Reinjection and Export" *Ekteshaf va Tolid* no. 77 (March 2010)
- Kassaizadeh, S.R. "NIGC: The Pioneer of the Country's Energy Sector (Sherkat-E Melli Gaz Parcham Dar-E Energy Dar Keshvar)." *Chashmandaz* 31, (2006)
- . "Zanjireyeh Tolid LNG (LNG Production Chain)." *Iranian LNG Conference*. Tehran, 2011

- Katzman, K. "Iran Sanctions." Congressional Research Service, June 2011
- . "Iran Sanctions." Congressional Research Service, April 2010
- . "Iran Sanctions." Congressional Research Service, July 2012.
- . "The Iran Sanctions Act (ISA)." 12. Washington D.C Congressional Research Service, 2009
- . "The Iran-Libya Sanctions Act." In *CRC Report for Congress, 2005*
- Kerkovic Milenkovic, T. "Drafting an International Buy-Back Agreement." *Facta Universitatis Series: Economics and Organization* 2, no. 2 (2004)
- "Key World Energy Statistics." International Energy Agency, 2009
- "Key World Energy Statistics." International Energy Agency, 2012
- Khajavi, A. "Tolid Manabe Gheyre Motearaf Gazi Amrica (Unconventional Gas Production in the U.S)." *Eghtesad Energy (Energy Economics)* no. 128 (1389 (2010))
- Khajehpour, B. CSIS, October 2011
- Khaleghi, Sh. "Exploitation of Natural Gas Requires Strategy Planning." *Hayat Nov Eghtesad* (06/04/2006)
- Khandan, M. "Ezdiad Bardasht, Challensh-Ha, Forsat-Ha and Zaroorat-Ha (Recovery Rate, Challenges, Opportunities and Necessities)." *Ekteshaf va Tolid (Exploration and Production)* July 2012, no. 91 (July 2012)
- . "Shetab Dar Sarmaye Gozari Fazayande Dar Hozeye Naft Va Gas (Accelerating Investment in Oil and Gas Industry)." *ekteshaf va Tolid (Exploration and Production)* April 2011, no. 78 (April 2011)
- Kimiagari, A.M, et.al. "Gheymat Gaz Tabili (Natural Gas Pricing)." *Eghtesad Energy (Energy Economics)* no. 125 and 126 (Farvardin va Ordibehesh 1389 (March-April 2010))
- Kinna, J.C. "Investing in Developing Countries: Minimisation of Political Risk." *Journal of Energy & Natural Resources Law* 89, no. 1983 (1983): 90-99
- Kinnander, E. "The Turkish-Iranian Gas Relationship: Politically Successful, Commercially Problematic." Oxford Institute for Energy Studies, 2010
- Kobayashi, H, et.al. "Mainstreaming Environment in the Energy Sector- the Case of the Energy-Environment Review for Iran." Washington D.C: The World Bank, December 2006
- Koplin, H.T. "Conservation and Regulation: The Natural Gas Allocation Policy of the Federal Power Commission." *Yale Law Journal* 64, no. 840 (1954-1955)
- Korin, A, and Luft, G. "Ahmadinejad's Gas Revolution: A Plan to Defeat Economic Sanctions." Institute for the Analysis of Global Security (IAGS), December 2006
- Korney, S, et.al. "New Development in the Algerian Petroleum Industry: The Algerian Hydrocarbons Law (2005)." *International Energy Law and Taxation Review* 2005, no. 10 (2005): 243-51
- Kretzschmar, G.L, et.al. "Resource Nationalism-Limits to Foreign Direct Investment." *The Energy Journal* 31, no. 2 (2010)
- Kuhn, M. "Enabling the Iranian Gas Export Options- The Destiny of Iranian Energy Relations in a Tripolar Struggle over Energy Security and Geopolitics." Berlin University, October 2012

- . "A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems." University of Durham May 2008
- Kuhn, M, and Jannatifar, M.J. "Foreign Direct Investment Mechanisms and Review of Iran's Buy-Back Contracts: How Far Gas Iran Gone and How Far May It Go?" *Journal of World Energy Law and Business* 5, no. 3 (2012)
- La Porta, R, et.al. "Law and Finance." *Journal of Political Economy* 106, no. 6 (December 1988): 1113-55
- Laan, T. "The High Cost of Cheap Energy: Russia's Fossil-Fuel Subsidies Undermine Sustainable Development." In *Bridges Trade BioRes*: International Centre for Trade and Sustainable Development 11 July 2011
- Lakshmanan, I. "Iran Sanctions Bid Targets Oil, Tanker Companies to Cut Exports." *Bloomberg* (Feb 6, 2012)
- Lampietti, J, et.al. "Revisiting Reform in the Energy Sector: Lessons from Georgia." Washington D.C: The World Bank, 2004
- Lauterpacht, E. "Law and Policy in International Resource Development." *Journal of Energy & Natural Resources Law* 145, (1993): 145-54
- "Looking at Energy Subsidies: Getting the Prices Right." *World Energy Outlook*: International Energy Agency, 1999
- Mabro, R. "Egypt's Oil and Gas: Some Crucial Issues." In *Distinguished Lecture Series* 25. Cairo: Egyptian Centre for Economic Studies, 2006
- Makovkine, V. "Legal Environment for Investments in Russian Mineral Resources." *Journal of Energy & Natural Resources Law* 336, (2003): 336-42
- Malek, M. "History of Iran: Oil Nationalisation." Iran Chamber Society
- . "Oil in Iran between the Two World Wars." Iran Chamber Society
- Maleki, A. "Iran's Regional Foreign/Energy Policy." *Oil, Gas & Energy Law Intelligence* 7, no. 1 (2009)
- Mandil, C. "Long-Term Energy Security in the Context of High Energy Prices." *BDI/BIAC roundtable on energy: world energy outlook 2005*. Berlin: International Energy Agency, 2005
- Manoochehri, N. "Tarhe Shah Looleye Gaz (Gas Trunkline Pipeline)." Tehran: Iranian National Gas Company, 1969
- Manzoor, Davood. "Cost-Benefit Analysis of Exporting Iranian Gas to Europe." *Iran Energy* 10, no. 26 (August 2006 (Mordad, 1385))
- Marcel, V. "Investment in Middle East Oil: Who Needs Whom?" London: Chatham House, February 2006
- Marin, D, and Schnitzer, M. *Contracts in Trade and Transition: The Resurgence of Barter*: Massachusetts Institute of Technology, 2002
- Marossi, A. "Impact of ILSA on Iran." *Oil, Gas & Energy Law Intelligence* 1, no. 2 (2003)
- . "Iran's Post-Revolutionary and Economic System." *oil, Gas & Energy Law Intelligence* 2, no. 4 (2004).
- Mash'al*, "Gas Export Gives Iran Stronger Position", 30 September 2007
- Mattei, U. "Efficiency in Legal Transplants: An Essay in Comparative Law and Economics." *International Review of Law and Economics* 3, no. 1994 (1994)

- Mattei, U, and Monti, A. "Comparative Law and Economics: A European Perspective." *Societa italiana economia pubblica*-Universita di Pavia, October 2003
- Mauro, P. "Corruption and Growth." *Quarterly Journal of Economics* 110, no. 3 (1995): 681-712
- McCary, M. "End Run on Sanctions (a Case Study on Contemporary Energy Investment in Iran)." *Florida Journal of International Law* 263, no. 12 (2000)
- Me, M. "The Iranian Buyback Model and Its Efficiency in the International Petroleum Market- a Legal View." *Oil, Gas & Energy Law Intelligence* 7, no. 1 (2009)
- "Turkey and Iran sign gas pact". MEES Vol.51:47. Nicosia, Cyprus: Middle East Petroleum & Economic Publications, 2008
- Mina, P. "Magham San'at Naft Dar Iran Dar Doran Shahanshani Pahlavi (Status of Oil Industry during Pahlavi Monarchy)." Tehran: National Iranian Oil Company, 1977
- Mitchell, J, et.al. "Resource Depletion, Dependence and Development: Iran." London: Chatham House, April 2008
- Miyamoto, A, et.al. "A Realistic Perspective on Japan's LNG Demand after Fukushima." *Oxford Institute for Energy Studies* (June 2012)
- Mohammad, N. "The New Face of Iranian Buyback Contract: Any Hope for Foreign Investment?" *Oil, Gas & Energy Law Intelligence* (April 2009)
- Molai, E. "Tarikhcheye Pardakhte Yaraneh Dar Eghtesad Iran (History of Subsidies in Iran's Economy)." *Resalat Eghtesadi*, November 2004
- Moller, L. "Legal Risks in the Oil Industry." *Oil, Gas & Energy Law Intelligence* 5, no. 4 (2007)
- Morey, E. "Notes on Welfare Economics- II. Efficiency, Equity and the Optimal Allocation." September 2002
- Morgan, T. "Policy Design and Implementation." *Energy Subsidies: Lessons Learned in Assessing their Impact and Designing Policy Reforms* (2003)
- Naficy, H. "Resource Depletion, Dependence and Development- Country Commentary Iran." Chatham House, 2008
- Nasr Esfahani, H. "Ghimat Gozari Gaz Tabi Dar Iran ( Natural Gas Pricing in Iran)." *Eghtesad Energy (Energy Economics)* no. 113-114 (Farvardin- Ordibehesh 1387 (March-April 2008))
- Nasrollahi Shahri, N. "The Petroleum Legal Framework of Iran: History, Trends and the Way Forward." *China and Eurasia Forum Quarterly* 8, no. 1 (2010): 111-26
- National Iranian Gas Company, "Saderate Gaz (Gas Export)." 27 Day 1390 (07 February 2012)
- National Iranian Oil Company Secretariat, 'A Chronology of the Iranian Oil and Gas Industry', 1970
- "Annual Report", *National Iranian Petrochemical Company*, 2010
- "Natural Gas in the OPEC Area." *OPEC 2nd E.C.A.F.E. Petroleum Symposium* edited by G Al-Ukaili. Tehran, September 1962
- "Natural Gas Market Review." International Energy Agency, 2009
- "Natural Gas Exports from Iran." *A report required by section 505(a) of the Iran Threat Reduction and Syria Human Rights Act of 2012*. Washington D.C.: U.S. Department of Energy October 2012

- Nikou, S. "The Subsidies Conundrum." Centre for Conflict Analysis and Prevention- U.S. Institute of Peace, 2010
- Nordhaus, W.D, et.al. "The Allocation of Energy Resources." *Brookings Papers on Economic Activity* 1973, no. 3 (1973)
- North, D.C. "Institutions, institutional change and economic performance, World Bank, World Development Paper, 1997
- North, D.C, and Weingast, B.R. "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeen-Century England." *The Journal of Economic History* 49, no. 4 (1989): 803-32
- "October OMR Sees Rising OECD Oil Stocks." International Energy Agency (IEA), 15 October 2012
- Ohnesorge, K.M. "Developing Development Theory: Law and Development Orthodoxies and the Northeast Asian Experience." *Journal of International Economic Law* 28, no. 2 (2007).
- Oil and Energy Trends*, "Iran Struggles to Expand Gas Industry." 31, no. 8 (2006): 3-6
- Oil & Gas Directory*, "Qatar Petroleum: Developing Qatar's Energy Resources for the World." Middle East: Qatar Petroleum, 2012
- Olivia, S, and Gibson, J. "Household Energy Demand and the Equity and Efficiency Aspects of Subsidy Reform in Indonesia." *The Energy Journal* 29, no. 1 (2008)
- Omidvar, H. "Iranian LNG, Natural Gas Export Plans Outlined." *Oil & Gas Journal*, (January 2010)
- . "Iran's Aggressive Natural Gas Expansion Plans." *Irano-British Quarterly Magazine* 25, no. 13 (2007)
- Orr, D, and Ulen, T.S. "The Role of Trust and the Law in Privatisation." *Quarterly Review of Economics and Finance* 33, (1993): 135-55
- Otman, W.A. "The Iranian Petroleum Contracts: Past, Present and Future Perspectives." *Oil, Gas & Energy Law Intelligence* 5, no. 2 (2007)
- Owji, J. "Rah-Andazie Do Khate Lole Jadid Saderate Gaz (Operation of Two New Gas Export Projects)." *Vatan-e Emrooz*, 28 August 2012
- . "Aghaze amaliat khate looleye shomal vas shomale shargh." *Shana*, NIOC, 24 November 2011)
- . "Tahaghoghe Ahdaf-e San'ate Gaz ( Materialisation of Gas Industry's Objectives)." *Shana*, NIOC official news website (October 2012)
- . "Tavafogh Jadid Iran Va Torkamanestan (Iran-Turkmenistan New Deal)." *Shana*, NIOC official news website (27 November 2012)
- Patel, B. "Gas Monetisation: A Techno-Economic Comparison of Gas-to-Liquid and LNG." *7th World Congress of Chemical Engineering*, edited by Foster Wheeler Energy Ltd. Glasgow, 2005
- "Pearl GTL- an Overview." Shell, 2011
- Perry, A. "Effective Legal Systems and Foreign Direct Investment: In Search of the Evidence." *International and Comparative Law Quarterly* 49, no. 783-799 (2000)
- Petroleum Economist*, "Iran: LNG Projects on Hold as Pipeline Plans Take Centre Stage." no. November-Focus (2008)
- Petroleum Economist*, "Pipelines: Investment Decision on Nabucco Imminent." no.

October-Focus (2009)

*Petroleum Economist*, "Pipelines-EU: Trans-Adriatic Pipeline Plans Advance." no. March- Focus (2008)

*Petronet*, "Kamboode Tazrigh-E Gaz (Insufficient Gas Re-Injection)." 07 October 2012

Peyman Pak, A. "Chera Tazrigh-E Be Makhazen-E Naft, Olaviat-E Asli Dar Masrafe Gaz-E Tabi'ie Ast? (Why Oil Field Re-Injection Is the Main Priority for Natural Gas Consumption?)." *Shabakeye tahlilgaran-e technology (Technology Analysts)*: National Iranian Gas Company, 24 Tir 1385 (14 July 2005)

Piran, H. "Hoghooghe naft va gaz dar davari beynolmelal (Petroleum law in international arbitration)."; *Etemad*, 10 Ordibehesh 1387

Pirani, S, et.al. "The Russo-Ukrainian gas dispute of January 2009: a comprehensive assessment.", Oxford Institute for Energy Studies, February 2009

Posner, M.V. "The Rate of Depletion of Gas Fields." *The Economic Journal* 82

Rahimi, G. "Olaviat bazarhaye saderat baraye gaze Iran (Prioritising Export Markets for Iran's Natural Gas)." *Iran Energy* 10, no. 26, Mordad 1385 (August 2006)

Ramazani, R.K. "Choice-of-Law Problems and International Contracts: A Case Study." *The International and Comparative Law Quarterly* 11, no. 2 (1962)

Ramsay, W.C. "Security of Gas Supplies in Europe." In *Nabucco: Conference of the Ministers of Energy (Austria, Bulgaria, Hungary, Romania and Turkey)*: International Energy Agency 2006

Ranani, M, et.al. "Cost-Benefit of Various Natural Gas Consumption Options with Emphasis on Oil-Field Reinjection." *Tahghighat-e Eghtesadi*, Autumn 2008, no. 84 (2008): 119-50

Razavi, H. "Natural Gas Pricing in Countries of the Middle East and North Africa." *The Energy Journal* 30, no. 3 (2009): 1-22

"Recent Developments in Energy Subsidies." International Energy Agency, 2011

"Recent Status of Natural Gas in Iran." *E.C.A.F.E Natural Gas Seminar* Tehran: The United Nations and the NIOC, December 1964

"Reforming Energy Subsidies: An Explanatory of the Issues and Challenges in Removing or Modifying Subsidies on Energy That Undermine the Pursuit of Sustainable Development." edited by Division of Technology United Nations Environment Programme, Industry and Economics: International Energy Agency, 2002

"Reopening of Upstream Oil & Natural Gas to Foreign Interests: Views and Actions of Iran, Iraq, Kuwait and Saudi Arabia." edited by Gas & Energy Law Intelligence Oil: International petroleum enterprises, 2005

Rivlin, P. "Iran's Energy Vulnerability." *The Middle East Review of International Affairs* 10, no. 4 (2006)

Roberts, P, and Jackson, J. "The Iranian Buyback Concession: The Principle and the Prospects." *International Energy Law and Taxation Review* 7, (2001): 159-61

Rogers, H. "The Impact of a Globalising Market on Future European Gas Supply and Pricing: The Importance of Asian Demand and North American Supply." *Oxford Institute for Energy Studies* (January 2012)

Rowse, J. "Allocation of Canadian Natural Gas to Domestic and Export Markets." *The Canadian Journal of Economics* 19, no. 3 (1986): 417-42

Sabahi, B. "Foreign Investment in Iran, in Light of the Passage of "Foreign Investment



- Promotion and Protection Act" (FIPPA, 2002)." *Oil, Gas & Energy Law Intelligence* no. 1 (2004)
- Sabatini, R. "Economic Sanctions: Pressuring Iran's Nuclear Program." Monterey Institute for International Studies, Nuclear Threat Initiative, June 24, 2010
- Sachs, J.D., and. Warner, A.M. "Natural Resource Abundance and Economic Growth." Cambridge, MA: Center for International Development and Harvard Institute for International Development- Harvard University, 1997
- . "Natural Resources and Economic Development: The Curse of Natural Resources." *European Economic Review* no. 45 (2001)
- Saeedi, A.M. "Barnameh-Rizi Estrategic Baraye Modiriate Makhazene Naft Va Gaz Keshvar (Strategic Planning for Management of Country's Oil and Gas Reservoir)." *Markaz Pajooresh-haye Majlis (Majlis Research Centre)* 2002, no. 34 (2002)
- Salehi-Isfahani, D, et.al "Subsidy Reform in Iran: Evidence from Survey Data." 25 September 2012
- Sarmadi-Rad, M.A. "Iran's Strategy for Export of Natural Gas." *Working Party on Gas*. UN/ECE, Geneva, January 2005
- Saunders, P.J. "Russian energy and European Security: a Transatlantic dialogue." The Nixon Center, February 2008
- Saxton, J. "Iran's Oil and Gas Wealth." United States Congress, March 2006
- Schramm, G. "The Design of a Resource Allocation Function." *The Canadian Journal of Economics* 5, no. 4 (November 1972): 515-30
- Segal, P. "How to Spend It: Resource Wealth and the Distribution of Resource Rents." *Oxford Institute for Energy Studies* (May 2012)
- Shana, 'Construction of 8 New Petrochemical Plants', National Iranian Oil Company, 19 Shahrivar 1391 (9 September 2012)
- Shiravi, A., and S.N. Ebrahimi. "Exploration and Development of Iran's Oilfields through Buyback." *Natural Resources Forum* 30, (2006): 199-206
- . "Legal and Regulatory Environment of LNG Projects in Iran." *Journal of Energy & Natural Resources Law* 25, no. 2 (2007)
- Shirazi, M. "Gas Industry in Iran." edited by NIGC. Tehran: Iranian Petroleum Institute for Public Relation Affairs 23 June 1974
- Slavin, B. "Iran Sanctions: Preferable to War but No Silver Bullet." In *Iran Task Force*: Atlantic Council June 2011
- Smith, K.C. "Managing the challenge of Russian Energy Politics: Recommendations for U.s. and EU Leadership." Centre for Strategic and International Studies, November 2010
- "Social Safety Nets: An Evaluation of World Bank Support 2000-2010." edited by Independent Evaluation Group (IEG). Washington D.C: The World Bank, 2011
- "Some Documents on the Nationalisation of the Oil Industry in Iran." Washington D.C.: Iranian Embassy, 1952
- Sorokina, O. "International Institutions and FDI Incentives: What Are the Available Instruments for Fostering Non-OECD Energy Investment?" International Energy Agency, 2002
- Stern, J. "Natural Gas in Asia: The Prospects to 2020." Lecture given at the Centre for

- Energy, Petroleum and Mineral Law and Policy: University of Dundee, 2010
- . "The New Security Environment for European Gas: Worsening Geopolitics and Increasing Global Competition for LNG " *Oil, Gas & Energy Law Intelligence* 5, no. 04 (2007)
- . "The Russian-Ukrainian gas crisis of January 2006." Oxford Institute for Energy Studies, January 16, 2006
- Stern, R "The Iranian Petroleum Crisis and United States National Security." *International Journal of Economic Sciences* 104, no. 1 (2007): 377-82
- Stevens, P. "National Oil Companies and International Oil Companies in the Middle East: Under the Shadow of Government and the Resource Nationalism Cycle." *Journal of World Energy Law and Business* 1, no. 1 (2008)
- "Study on Energy Supply Security and Geopolitics." The Hague: Clingendael International Energy Programme (CIEP), 2004
- "Subsidies in Armenia." Yerevan, Armenia: Economic Development and Research Center (EDRC), 2007
- Takin, M. "Iran Seeks Large Volume of Capital Investment to Boost Upstream Action." *Oil & Gas Journal* (1999)
- . "Oil and Gas-Can Iran Produce?" Centre for Global Energy Studies  
<http://igs.nigc.ir/ARTIC/NG-00.PDF>
- . "U.S. Sanctions against Oil Giants at Odds with Its Caspian Policy." *Oil & Gas Journal* (1997)
- Tamanaha, B.Z. "The Lessons of Law-and-Development Studies." *American Journal of International law* 470, (1995)
- Tarasov, A. "The Making of Empires: Russia's Gas-Exporting Pipeline V Nabucco." *Journal of World Energy Law and Business* 4, no. 1 (2011)
- Tavana, M. " Moghaser Kist? Tanaghoz Gooie Ms'oolan Dar Bareye Saderate Gas (Who Is Responsible? Inconsistent Official Views about Natural Gas Export)." *Shargh* (2004)
- Tavanpour Paveh, M. "Energy Subsidy Reform in Iran." *Energy Subsidies: Lessons Learned in Assessing their Impact and Designing Policy Reforms* (2003)
- "Technical proposal for Kalingas LNG project", Kangan-Iran, vol.10, March 1978
- "The Impact of the Financial and Economic Crisis on Global Energy Investment." *G8 Energy Minister's Meeting 24-25 May 2009*, edited by International Energy Agency, 2009
- "The Scope of Fossil-Fuel Subsidies in 2009 and a Roadmap for Phasing out Fossil-Fuel Subsidies." *An IEA, OECD and World Bank Joint Report Prepared for the G-20 Summit*. Seoul (Republic of Korea), November 2010
- The Washington Post*, 'EU Bans Import of Natural Gas from Iran, Trying to Ramp up Pressure on Nuclear Issue', 15 October 2012
- Thurber, M.C., and Chang, J. "The Policy Tightrope in Gas-Producing Countries: Stimulating Domestic Demand without Discouraging Supply." *Pacific Energy Summit*. Jakarta, Indonesia, 2011
- Tippee, B. "State Oil Companies Have Major Role in Oil World." *Oil & Gas Journal* (1993)
- Toman, M, and Krautkraemer, J. "Fundamental Economics of Depletable Energy

- Supply." Resources for the Future, November 2003
- Tomberg, I. "Iran in the European Gas Market: A Russian Point of View." Paris: The Institut francais des relations internationales (Ifri), 2009
- Torbat, A.E. "Impacts of the US Trade and Financial Sanctions on Iran." *The World Economy* 28, no. 3 (March 2005): 407-34
- "Total Number of Bilateral Investment Agreements Concluded." United Nations Conference on Trade and Development (UNCTAD), 1 June 2012
- Transparency International*, 'Corruption Perceptions Index', 2012
- Trubek, D.M, and Galanter, M. "Law and Society: Scholars in Self-Estrangement: Some Reflections on the Crisis in Law and Development Studies in the United States." *Wisconsin Law Review* 1062, (1974)
- "Turkey Looks Elsewhere for Gas." *Oil and Energy Trends* (2007)
- Ulen, T.S. "The Role of Law in Economic Growth and Development." *Bonn Law & Economics Workshop* (April 2010)
- Vahedi, H. "Naft Va Gaz Dar Rabete Ba Tahavolat Iran Dar 50 -70 (Oil and Gas in the Context of Iran's Development in 1970-1990)." NIGC Archives
- Valdés, A, and Foster, W. "A Profile of Border Protection in Egypt: An Effective Rate of Protection Approach Adjusting for Energy Subsidies." Washington D.C: The World Bank June 2011
- Varzi, M. "Financing Oil and Gas Investments in Iran." *Oil and Gas Law and Taxation Review* no. 12 (1998)
- Verma, Sh.K. "Energy Geopolitics and Iran-Pakistan-India Gas Pipeline." *Energy Policy* 35, (2007): 3280-301
- Victor, D. "The Politics of Fossil-Fuel Subsidies." *Untold Billions: Fossil-fuel subsidies, their impacts and the path to reform*. Geneva: The Global Subsidies Initiative (GSI) of International Institute for Sustainable Development (IISD), October 2009
- Wälde, T. W., "Legal and Policy Implications of a Relationship of Two International Treaties in Natural Energy Resources: OPEC and ECT." *Oil, Gas & Energy Law Intelligence* 2, no. 05 (2004)
- . "Foreign Oil/Gas Investment in the CIS: Implications for Foreign Investors " *OPEC Bulletin* 7, no. 18 (1994): 16-20
- . "International Energy Investment." *Energy Law Journal* 17, (1996): 191-215
- . "Law, Contract & Reputation in International Business: What World?" *CEPMLP Internal Journal* 3
- . "Managing the Risk of Sanctions in the Global Oil & Gas Industry: Corporate Response under Political, Legal and Commercial Pressures." *Texas International Law Journal* 36, (2001): 184-230
- Walied, El-M. "State Ownership of Minerals under Islamic Law" *Journal of Energy & Natural Resources Law* 14, (1996)
- Wall, E.H. "The Iranian-Italian Oil Agreement of 1957." *International and Comparative Law Quarterly* 7, no. 4 (1958)
- Wood, D. and Economides, M.J., "Iran Stuck in Neutral: Energy Geopolitics Hinder Iran's Oil and Gas Industry's Development." *Oil, Gas & Energy Law Intelligence* 5, no. 2 (2007)

- "World Energy Outlook: China and India Insights." International Energy Agency, 2007
- "World Energy Outlook." International Energy Agency, 2009
- "World Energy Outlook." International Energy Agency, 2008
- World Energy Outlook."Middle East and North Africa Insights, International Energy Agency, 2005
- "World Energy Investment Outlook." International Energy Agency, 2003
- "World Energy Outlook." International Energy Agency, 2011
- "World Energy Outlook." International Energy Agency, 2012
- World Gas Intelligence*, "Iran Asks: Why Export Gas?." September 6, (2005)
- World Gas Intelligence*, "Iran to Start LNG Exports by 2009, from First Three Plants." 22 December 2004
- World Gas Intelligence*, "Iran Turning LNG Unfriendly?." 6 July 2005
- World Gas Intelligence*, "Uncertainties Behind EGL's Iran Gas Buy." 19 March 2008
- "World Investment Report ": United Nations Conference on Trade and Development, 2005
- "World Investment Report: Transnational Corporations and the Internationalization of R&D." 366. New York and Geneva: United Nation Conference on Trade and Development (UNCTAD), 2005
- "Worldwide Engagement for Sustainable Energy Strategies." International Energy Agency, 2009
- Yergin, D. "Ensuring Energy Security." *Foreign Policy* 85(2), 2006
- Online Resources**
- Bahmani, H. "Pishraft Matloobe Hafarie Chah-Haye Tose'eye Meidan Gaze Kish ( Development of Well-Drilling Process in Kish Gas Field)." <http://shana.ir/193428-fa.html> , August 2012
- Becker, J, and Nixon, R. "U.S. Enriches Companies Defying Its Policy on Iran." In *The New York Times*: <http://www.nytimes.com/2010/03/07/world/middleeast/07sanctions.html?pagewanted=1&r=1> , 6th March 2010
- Blenkinsop, P, and Younglai, R. "Banking Swift Says Ready to Block Iran Transactions." *Reuters* <http://www.reuters.com/article/2012/02/17/us-iran-sanctions-swift-idUSTRE81G26820120217> (17 February 2012)
- Chazan, G. "Sanctions Choke Off Iran Oil Output." *Financial Times* <http://www.ft.com/cms/s/0/50079b60-6df7-11e1-b98d-00144feab49a.html#axzz24xCOM0fy> , (14 March 2012)
- "Council of the European Union." [http://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/EN/foraff/115976.pdf](http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/EN/foraff/115976.pdf), 26 July 2010
- "Country Analysis Briefs: Iran ". Energy Information Agency, the U.S. Department of Energy <http://www.eia.gov/countries/cab.cfm?fips=IR>, February 2012
- Erdbrink, T. "Sanctions Begin to Compound Iran's Severe Economic Problems." *The Washington Post*, <http://www.washingtonpost.com/wp-dyn/content/article/2010/10/05/AR2010100505972.html> (October 5, 2010)
- Fararu News Agency*, "Chera Sherkat-E Saderat-E Gaz-E Iran Monhal Shod.?" (Why

Was the National Gas Export Company Dissolved?

<http://fararu.com/fa/news/118822> 14 July 2012

Fars News Agency. <http://farsnews.com/newstext.php?nn=13910116001337>

Fars News Agency. "Afzayeshe Ghachaghe Gazooil ( Increase of Diesel Smuggling)."

<http://www.farsnews.com/newstext.php?nn=13910811000017>, 11 Azar 1391 (01 October 2012)

Fars News Agency, "India Pays Rupiah for Iranian Oil."

<http://www.farsnews.com/newstext.php?nn=13910514000338> (August 2012)

Faucin, B, and Swartz, S. "Iran Curbs LNG-Export Ambitions." *The Wall Street Journal*:

[http://online.wsj.com/article/NA\\_WSJ\\_PUB:SB10001424052748704216804575423212231718960.html](http://online.wsj.com/article/NA_WSJ_PUB:SB10001424052748704216804575423212231718960.html). (12 August 2010)

*Washington Post*, "France's Total: Too Risky to Invest in Iran."

<http://www.washingtonpost.com/wpdyn/content/article/2008/07/10/AR2008071000026.html>, (July 2008)

Ghatreh News Agency, "Details of \$200 billion Investment in the Oil Industry."

<http://www.ghatreh.org/news/nn5177572>, 15 April 2010 (25 Shahrivar 1389)

*Global Security*, "Corruption."

<http://www.globalsecurity.org/military/world/iran/corruption.htm>, 2009

Hoyos, C. "The Downsides of Subsidising Energy." In *Financial Times*:

<http://blogs.ft.com/energy-source/2009/11/17/the-downsides-of-subsidising-energy/>, (2009)

"Implementation of National Defence Authorization Act Sanctions on Iran." U.S.

Department of the Treasury <http://www.treasury.gov/press-center/press-releases/Pages/tg1409.aspx>, (June 2012)

"Inauguration of the Largest Oilfield Gas Re-Injection Project ( Bahre Bardai Az

Bozorgtarin Projeye Tazrigh Gaz Khavarmianeh)." National Iranian Oil Company <http://ekteshaf.nioc.ir/55/pdf/55-04.pdf>, 2011

*Iran Economics*, "Petroleum sector's politicisation not compatible with the 20-year

development plan (sias-i-zadegi dar san'ate naft va gas motabegh ba barnameye tose'eye 20 saleh nist), <http://www.iraneconomics.net/fa/articles.asp?id=2854>

"Iran's Poor Economy and the Subsidies Getting Targeted (Eghtesad-E Bimar-E Iran Va Yaranehai Ke Hadafman Mishavad). " *Iran's Chamber of Commerce, Industry and Mine*:

[http://iccim.ir/fa/index.php?option=com\\_content&view=article&id=2737:-----s---&catid=38:---&Itemid=63](http://iccim.ir/fa/index.php?option=com_content&view=article&id=2737:-----s---&catid=38:---&Itemid=63), 1387 (2008)

Jonoobi, P. "Lozome Tavajoh Bishtar Be Sarmaye-Gozari Dar Bakhsh-e Gaz-E Keshvar

(Requiring More Investment in the Country's Gas Sector )." National Iranian Gas Company <http://www.nigc.ir/utills/getFile.aspx?Idn=5075>, 2010

Mably, R. "Shell Seeks Iran Sanctions Workout Via Cargill Grain Barter." *Reuters*

<http://www.reuters.com/article/2012/10/26/us-shell-iran-idUSBRE89P0UE20121026>, 26 October 2012

Mackenzie, K. "Is Sanctions Talk Already Affecting Iran's Troubled Domestic Supply?"

*Financial Times*: <http://blogs.ft.com/energy-source/2010/04/16/is-sanctions-talk-already-affecting-irans-troubled-domestic-supply/>, 16 April 2010

Mirtajaldini. "Domestic Consumption 2-3 Times Bigger Than Production (Masraf-E

Dakheili 2-3 Barabar-E Tolid-D Keshvar)." *Iranian Government official website* <http://www.dolat.ir/Nsite/FullStory/?Id=190741>, 1389 (2010)

- Mohammadian, H. "Iran Oil Industry Need \$145 Billion Investment" *Fars News Agency* <http://english.farsnews.com/newstext.php?nn=8709051481> (November 2008)
- "Natural Gas: Environment and Technology." <http://www.naturalgas.org/environment/environment.asp>
- Nawar, A.H. "Reforming the Domestic Market of Natural Gas in Egypt: Lessons from Selected Countries Experiences." In <http://ssrn.com/abstract=1018577> . Cairo, Egypt: Cairo University, Faculty of Economics and Political Science, 2007
- Nikou E, A." *Iran Economics* ", [http://www.iraneconomics.net/index.php?option=com\\_content&task=view&id=6165&Itemid=110&lang=UTF-8](http://www.iraneconomics.net/index.php?option=com_content&task=view&id=6165&Itemid=110&lang=UTF-8), (July 2012)
- Noel, P. "Is Europe Shooting Itself in the Foot (to the Benefit of Russia)?" In *EU Energy Policy Blog*: <http://www.energypolicyblog.com/2010/07/06/is-europe-shooting-itself-in-the-foot-to-the-benefit-of-russia/> , 2010
- Pars Oil History of National Iranian Gas Company." NIGC, <http://en.nigc.ir/Site.aspx?ParTree=11131515>
- Pars Oil & Gas Company, <http://www.pogc.ir/Default.aspx?tabid=154> , 2012
- Pars Oil & Gas Company, <http://www.pogc.ir/Default.aspx?tabid=136> , 2012
- Pars Oil & Gas Company, "South Pars Gas Reaches Iran in summer 2013." <http://pogc.ir/Default.aspx?tabid=94&ctl=Detail&mid=448&Id=10393> , October 2012
- Payne, J, and Cho, M. "EU Sanctions Strangle Iranian LPG Exports to Asia." *Reuters*: <http://www.reuters.com/article/2012/10/31/us-lpg-korea-iran-idUSBRE89U0NE20121031>, 31 October 2012
- Press TV*, "China to invest USD 20bn to develop Iranian oil fields: Qasemi.": <http://www.presstv.ir/detail/2012/07/08/249976/china-to-invest-usd-20-bn-in-iran-oil-fields/>, 8July 2012
- Robson, M. "How NOCs Can Redefine the Future for the Middle East." *Middle East Economic Survey* [www.mees.com/en/articles/4760-how-nocs-can-redefine-the-future-for-the-middle-east](http://www.mees.com/en/articles/4760-how-nocs-can-redefine-the-future-for-the-middle-east) (07 May 2012)
- Rowely, M "The Nabucco Pipeline Project: Gas Bridge to Europe?" *Pipeline and Gas Journal* 236 no. 9: <http://www.pipelineandgasjournal.com/nabucco-pipeline-project-gas-bridge-europe> , (September 2009)
- Shana*, "Transmission of 7.5bcm of Gas for Reinjection into 3 Oil-Rich Regions. ": <http://www.shana.ir/184322-fa.html> , 7 February 2011
- Shaukat, A, and Uy, C. "Energy Challenges Facing the CIS."no. 7 (2007), available at: <http://www.cisoilgas.com/article/Energy-Challenges-Facing-the-CIS/>
- Shimbun, Y. "Japanese Firm to Withdraw from Iran Oil Field Project." *Daily Yomiuri Online* <http://www.yomiuri.co.jp/dy/business/T100930005106.htm> , October 2010
- Solomon, J, and Fassihi, F. "Iran Redistributes Wealth in Bid to Fight Sanctions." In *Iran va Jahan* Available at: <http://www.iranvajahan.net/cgi-bin/news.pl?l=en&y=2011&m=07&d=28&a=1> , 2011
- Tabnak News Agency*, "Laghv-E Mosavabey-E Shekate Saderate Gaz (Abolishment of Decision over Dissolution of the NIGEC)." <http://www.tabnak.ir/fa/news/270070> September 2012
- Tavakoli, A. "Inflation 10% or 60%?." edited by <http://www.entekhab.ir/fa/news/62827> ,

May 2012

Tehran Chamber of Commerce, Industries, Mines and Agriculture. August 2012  
<http://www.tccim.ir/newsfullstory.aspx?nid=31198>.

"The Economy- Role of the Government." United States: U.S. Library of Congress  
<http://countrystudies.us/iran/63.htm>.

Wood Mackenzie (2009), *Iran- Country Overview*. 77(2011)

*Yaraneh News*,  
<http://yaraneh.cppo.ir/pages/frontEnd/newsPreview.aspx?guid=95291016-b446-415a-b3b8-790dc5e5b4b7>, 2011

Zakaria, F. "Iran's Growing State of Desperation." *The Washington Post*  
<http://thecommonsgood.net/2012/01/irans-growing-state-of-desperation>,  
 (January4, 2010)

### **Legal Resources**

Agreement on Subsidies and Countervailing Measures, World Trade Organisation

Arms Export Control Act, US Department of State

Charter of the United Nations

Comprehensive Iran Sanctions, Accountability, and Divestment Act of 2010, House of  
 Representatives Senate United States, 2010

Executive Order 12613--Prohibiting Imports from Iran, US Congress

Executive Order 13590-- Iran Sanctions, US Congress

Executive Order 12957, US Congress

Iran's 20-Year Economic Perspective 2006

Iran-Libya Sanctions Act of 1996, The US Congress

Iran Targeted Subsidies Reform Act 2010

Islamic Republic of Iran's Fifth Five-Year Development Plan 2011

Islamic Republic of Iran's Fourth Five-Year Development Plan 2006

Islamic Republic of Iran's Second Five-Year Development Plan 1996

Islamic Republic of Iran's Third Five-Year Development Plan 2001

Law on the Administration of Free Trade Zones 1993

The 1979 Constitution of Islamic Republic of Iran

The Iran (European Union Financial Sanctions) Regulations 2010

The Iranian Civil Code 1906 and its Amendments of 1979

The Iranian Code of Civil Procedure

The Iranian Foreign Investment Promotion and Protection Act 2002

The Iranian Official Gazette

The Iranian Petroleum Act 1974

The Iranian Petroleum Act 1987

The Law on Registration of Branches and Representatives of Foreign Companies

UNCITRAL Legal Guide on International Countertrade Transactions

United Nations General Assembly Resolution 1803

United Nations Resolution 1737 U.N. Doc. S/Res/1737

United Nations Resolution 1747, U.N. Doc. S/Res/1747

United Nations Resolution 1929, U.N. Docs/Res/1929